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THE TENTH LACUS FORUM 1983

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INTRODUCTION

LACUS held its tenth annual conference from August 7-11, 1983, at Laval University, Ste-Foy, in the suburbs of Quebec City. The International Society of Functional Linguistics (ISFL/SILF) held its tenth annual conference concurrently. The two associations had decided to hold their conferences jointly, and this provided an occasion for stimulating discussions between researchers from each side. It is noteworthy that LACUS and ISFL have continued to attract new members from far afield. Indeed, over 200 linguists, from five continents, travelled to Quebec City for the event. They represented 20 countries: Canada, The United States, France, Britain, Belgium, West Germany, Switzerland, Italy, Spain, Japan, Australia, Sweden, Iceland, Algeria, Kuwait, Denmark, Mali, Senegal, Greece and the People's Republic of the Congo. It is to be hoped that this first joint conference will be repeated in the not too distant future.

The Conference opened with a welcoming speech by Jean-Guy Paquet, Rector of Laval University, and a wine-and-cheese party. It closed with a cruise on the St. Lawrence that gave participants an opportunity to admire the beauty of Quebec's natural scenery.

The proceedings included an Inaugural Address by Madeleine Mathiot, an Invited Address by Paul Garvin, and 48 papers by members of both associations on a wide variety of subjects. This was highlighted by a grand banquet and the Presidential Address by LACUS president, M.A.K. Halliday.

We apologize to those authors who do not find their article under the heading of their choice. The classification we have adopted is but one way of enabling the reader to find a title of interest quickly. Naturally, there are many articles that could have been placed under several headings. We are fully aware of this and ask for your [illegible] pleasant reading!

Alan Manning
Pierre Martin
Kim McCalla

I

SPECIAL LECTURES

1983 PRESIDENTIAL ADDRESS

ON THE INEFFABILITY OF GRAMMATICAL CATEGORIES

M. A. K. Halliday

University of Sydney

We live in an age of growth, in which every day more and more things come into our lives; and things, and all their parts, need names. So more and more words come in with them – new words, or new ways of exploiting, embellishing and combining the old ones; and in this way the balance is maintained. There is no sign that our onomastic resources are drying up; indeed we are likely to run out of natural resources long before we run out of names for the things we make out of them. But there are signs that the things are becoming more resistant to being named. There is no natural way of referring to the various small plastic objects that lie around the house, or the toys we give our children, or the furniture we now have to assemble for ourselves. They no longer fit our taxonomies. We live in modules, sit on units and entertain ourselves with systems.

Behind these nameless objects is a technology and a science that produce them; and there, less visible to us, is another realm of things that have to be named. Many of them are abstract things, the categories and concepts of a theory; and some of these also prove recalcitrant to ordinary onomastic processes – they only come to be 'named' by some mathematical formula, like 'a function of the co-ordinates of x and y', 'the integer over psi_1 and psi_2', and so on. But somehow they have to be enmeshed in language; otherwise they are not brought under control.

In this respect linguistic categories are no different from those of other theories; they too need names. It is true that in one instance a theory evolved without them: Chinese phonology, in its first few centuries, had neither terms nor definitions – and still managed to give an account of the syllable that was explicit enough to enable later scholars to reconstruct the system. But western linguists were always more namebound; they either created a terminology, or borrowed it from some other field. The earliest known Arabic grammarian, Al-Khalil ibn Ahmad, took various terms over from architecture; his great pupil Sibawayhi, who had been trained as a lawyer and so placed a high value on names and definitions, replaced them with a more systematic terminology derived from legal models (see Carter 1981).

In ancient Greek linguistics, by contrast, the technical terms evolved out of everyday language. The process was a gradual one, extending over three or four centuries; and in the course of this time the original terms had moved some distance from their non-technical meanings, evolving as the theory evolved. Thus, in everyday language, *onoma* meant 'a name', *rhēma* meant 'a saying'; *logos* meant 'speech, discourse' and *grammatikē* meant 'writing'. As *grammatikē* evolved into 'grammar', *onoma* came to mean 'a noun'; *rhēma* became first 'rheme', in the Prague sense, and then 'a verb'; while *logos* came to mean 'a sentence'. Here it was the folk linguistic terms for forms of discourse which became the source of technical nomenclature in grammar.

Once having reified these abstract categories by naming them, the Greek grammarians went on to ask what the names meant. What 'is' a noun? they wondered. At first, this was a question of: how do I recognize a noun when I see it? how do I know whether something is a noun or not? But before long the questions came to be asked in the other direction: what 'is' a noun, in the sense of what function does it serve? At this second stage, instead of treating 'noun' as the Value and then supplying a Token for it, the definition now treats 'noun' as the Token and seeks to

supply a Value for it (for the terms Token and Value see Halliday, in press: Chapter 5). Instead of 'a noun is a word that inflects for number and case', we have 'a noun is the name of a person, creature or thing'. This is a decoding definition, one which embodies a notion of 'what the category means'.

To define a linguistic term by encoding is relatively simple: one hops along the realizational chain of grammatical categories until reaching some form of output. Defining a noun in this way would involve, altogether, three steps: (1) a move in rank – a noun inflects for case; (2) a move in delicacy – case is nominative, genitive, dative or accusative; (3) a move in exponence – the accusative case ends in *-n*. But how does one define by decoding? how do we say what a grammatical category means?

To maintain some kind of parallel, saying what a category means would imply relating it to something that is observable on the content plane – to some aspect of experience, in the context of the culture. But this is a very different, and a very difficult, task.

Let us return for a moment to the encoding type of definition. Between a grammatical category and its Token – that by which it is realized – runs the familiar line of arbitrariness in language; so the metalanguage in which the category is ultimately represented is of a different order from the category itself. It consists of letters, or phones, or some abstraction from these: phonological features, in a typical case. There may be some magic gateway of biuniqueness between these two worlds, as happens in a language where every morpheme is mapped into a syllable; but this, while it is a bonus to the linguist, definitely does not lead him to say that a morpheme and a syllable are 'the same thing'. Hence in an encoding definition the category and its interpretation are clearly distinct; there is no danger of a statement such as 'a noun is a word ending in *-us*' being tautological.

But between a grammatical category and its Value – that which it realizes – there is no such line of arbitrariness. Grammars are 'natural', in the sense that wordings are related iconically to meanings; and this, in fact, is how the name of the category was arrived at in the first place. Hence in a decoding definition there is no mechanism for insulating the category from its interpretation. A noun is called a 'name' because it means a 'name'. So to define a noun by saying that it is the name of something (and the gloss 'of a person, creature or thing' adds nothing; it simply lists everything nameable) is, at first sight, merely tautologous.

This apparent tautology is one that is discussed by Michael Reddy in his paper 'The Conduit Metaphor' (1979), in which he develops Whorf's theory of the metaphor of the container in languages of the Standard Average European' mould. According to Whorf, western languages characteristically employ an extended spatial metaphor whereby mental processes and relations become 'objectified', as illustrated in his famous passage (1956: 146)

> I grasp the thread of someone's argument, but if its level is over my head my attention may wander and lose touch with the drift of it . . .

This is accompanied by an antinomy of count / mass, which produces expressions such as *a pane of glass,* conceptualized as 'a pane with glass in it' (like *a cup of tea),* and extending to time construed as a container, as in *an hour of bliss.* Reddy takes this argument one step further and shows how the metaphor determines the way we talk about communication, with ideas, meanings and emotions being packaged inside words and sentences and piped along a conduit. He lists about 150 such expressions, like *get your thoughts across, his feelings came through, the lines are empty of meaning.*

All this, according to Reddy, is innocent enough. But it may become pathological, when the conduit metaphor pervades the whole terminology of linguistics,

because the effect of this metaphor is that all words for kinds and quantities of discourse, like *poem, message, text,* are split into two meanings: (i) the content, and (ii) the container. In our terms, there is a stratal polysemy: these words refer both to a piece of meaning (semantic stratum) and to a piece of wording (lexicogrammatical stratum). Reddy's view is that as long as one remains within the conduit metaphor the effect is still benign, because the one sense is then metonymic to the other: that is, the meaning is 'contained in' the wording. So *text*$_2$ 'wording' 'contains' *text*$_1$ 'meaning', and no great harm is done. It is if one tries to escape from the metaphor that this kind of polysemy becomes pathological.

It will have been noticed that this stratal polysemy is precisely the process by which the original Greek terms had come to be extended so as to serve in the grammar: starting as names of semantic (or pre-semantic) categories, they were then transferred to become names for the lexicogrammatical categories by which the former were (typically) expressed. So *logos*$_2$ 'sentence' is that by which *logos*$_1$ 'discourse' is realized. Likewise with *onoma* and *rhēma: onoma*$_2$ 'noun' is what realizes *onoma*$_1$ 'name' – while with *rhēma* there is an additional step: *rhēma*$_1$ 'saying' is realized by *rhēma*$_2$ 'Rheme', which is in turn realized by *rhēma*$_3$ 'verb'.

It is not hard to see why this happens. It soon becomes obvious, once one begins to be aware of language as an object and starts to investigate its central processing unit, that the categories of this coding system are not arbitrary, but relate systematically to the meanings. It is natural, therefore, to name them by reference to their semantic function.

With terms for classes and units, like those above, the polysemy is confined within language. Both 'noun' and 'name' are linguistic entities; the difference is simply that one is grammatical, the other semantic. The same is true of the pair 'sentence' and 'discourse'. But with the majority of grammatical terms – those for functions, systems and terms in systems (features) – this does not hold. These too have to be imported into grammar from outside; but in this case they come not from folk semantics but from outside language altogether. When categories of this type come to be named, the terms that are introduced for the purpose interpret the categories by reference to some aspect of extralinguistic experience.

A typical example would be a complex of categories such as '(system) number: (features) singular / plural'. Consider a label such as 'plural'. This derives from the ideational meaning of the category: it expresses a relation between that category and the speakers' experience of the world. The term 'plural' is the name of this relationship. But the same term is also used as the name of the grammatical category which realizes this relationship; a noun will be said to be 'plural (in number)'. And this can cause problems.

Typically in the history of western linguistics the reasoning has proceeded as follows. In the morphology we are presented with a certain category, let us say a two-term system of the form 'a : x / y'; thus, 'all *a* are either *x* or *y*'. By inspecting, or perhaps introspecting, typical contexts in which these forms are used we recognize a redundancy, such that *x* redounds with one of a set of countable things and *y* redounds with two or more. The abstract labels 'a : x / y' are then replaced by the substantive labels 'number : singular / plural'. This is of course an idealized model of the process; such abstract labels have never been used, as far as I know, at least until modern times. But it helps to bring the issue into focus.

What happens next? The categories that have been labelled in this way then come to be reified, and the question is asked what they mean. The answer given is: 'singular means one of a thing, plural means more than one'. In fact, these are definitions of the words *singular* and *plural;* but they are made to serve as definitions of the metawords, the terms of the metalanguage. Next, the terms are evaluated for their predictive power: will they correctly predict text from situation, or situation

from text? Given a plural form, will it refer to more than one of a thing? Given more than one of a thing, will it be referred to by a plural form?

The answer this time is: yes, with a certain degree of probability – high enough for many purposes, but inadequate for some, and disturbing for those who like their categories pure. This then gives rise to a theory of 'core meanings': a term of the metalanguage is said to represent the 'core meaning' of the category. With this defence, in spite of *fruit* and *furniture, scissors* and *oats* (or their counterparts in the language in question), 'singular' and 'plural' can continue to be used.

This problem – that of interpreting a symptom and then labelling its interpretation – is common to all sciences. It arises in any realm of discourse involving explanation and abstraction. Somehow, a metalanguage has to be created, and created out of natural language, in order to assign a Value to a Token. I go to my doctor with a swelling somewhere on my body. He looks at it, and pronounces "You've got an oedema". What is *oedema?* – Greek for 'swelling'. But what he is diagnosing is a more abstract swelling – it is that which is manifested by the swelling on my body. An oedema is the Value of which a swelling is the Token. The use of a different term in this way allows for stratal diversification: not all swellings realize oedemata, and not all oedemata are realized as swellings. The relationship is a probabilistic one – and hence invites further, more delicate investigation.

Where do such terms come from? Ideally, they come from a parallel but distinct semiotic. It should be a natural language, in order to maintain the non-arbitrariness of the relation between the symptom and the underlying condition – given *swelling* and *oedema* we would predict that, in default of any special circumstances, they will refer to the same thing. But it should be a different language, or at least a different sub-language, in order to allow for instances where they do not. And it should be a higher status code, in order to symbolize a higher order of abstraction (and also the social value of abstract knowledge). The ideal source of a metalanguage is thus the 'high' variant in a diglossia. A word of a natural language that is at one remove from primary reality, such as ancient Greek, or classical Chinese, or Sanskrit, is appropriate for symbolizing a phenomenon that is at one remove from primary observation.

But when it comes to metalinguistic matters, linguistics presents a special case. It is not just another science. It is 'language turned back on itself', to use Firth's (very British) expression; or, in Weinreich's (very American) formulation, 'language as its own metalanguage'. As a consequence, where other sciences need two terms, we need three: one for the phenomenon, and two for the metaphenomenon, one grammatical and the other semantic. To return to the example of number: we need to be able to say that the grammatical category of 'plural' typically expresses (realizes) the semantic category of, say, 'manifold', which typically expresses (redounds with) more than one of a thing.

But notice what has happened. The grammatical category of 'plural' was set up in the first place to account for a morphological phenomenon: suppose this had been in English, then the *-s / -z / -iz* of *cats, dogs* and *horses.* At this point, therefore, we ought to have come round in a circle: *-s / -z / -iz* means -s / -z / -iz. But instead we have tried to escape from the circle by finding a gloss for *-s / -z / -iz* – that is, an exact synonym for it, in natural language wording; and that is an extremely difficult thing to do. We might try glossing it as more than one, or several, or many; but the trouble is we don't actually say *I like more than one cat,* or *I like many cat* – we say *I like cats.* The meaning of the *-s* on *cats* is impossible to gloss in natural language, except by means of itself. The category is, quite simply, ineffable.

Why should this be so? One hypothesis might be that natural languages are not good things for glossing with; in that connection, Reddy remarked 'As a metalanguage, English, at least, is its own worst enemy'. We can certainly point to some

deplorable habits that English has, both in its vocabulary and in its grammar. For example, we frequently use the same lexical item to stand both for the study of a particular phenomenon and for the phenomenon itself, as when we talk of someone's *psychological make-up* instead of their *psychic make-up*. It can be disastrous for students of linguistics (not to mention the general public) that *grammar* is both the name of a stratum in language and the name for the study of that stratum; and likewise with *phonology* and *semantics*. Not even the conduit metaphor excuses a ragged polysemy such as these.

Even worse are some of English's grammatical pathologies. For our metalinguistic vocabulary, we usually draw on some parallel semiotic as already illustrated, bringing in new words so as to be freed from the accumulated associations of the old ones. (The freedom is often shortlived, since the new term may soon be borrowed into the daily language, like the *psychological* above.) But for the grammar of our metalanguages we are usually content to stick with the everyday forms of English; and this can lead to serious misconstructions – such as the following, perpetrated by myself, when I wrote some time ago:

> The Theme of an English clause is the element that is put in first position.

Now I meant this as Value ^Token, with *is* meaning 'is represented by'. But all such clauses in English, if they have the verb *be*, are ambiguous; and this one was frequently misread as Token ^ Value, with *is* taken to mean 'represents'. In other words, a clause that was intended to say how the Theme in English is to be recognized was taken as a statement of how it is to be defined – one of the most fundamental confusions in linguistics. It would all have been avoided if the verb *be* had had a passive; I should, therefore, have created the appropriate metagrammar and written:

> The Theme of an English clause is been by the element that is put in first position.

So there are problems in using natural language as a metalanguage, for whatever purpose: its logical and ideational systems were not designed for the task. Some combinations of features may be realized in ways that are ambiguous, others may carry a baggage of unwanted corollaries, and so on (this does sometimes lead to the creation of minor neologisms in the grammar, like the prepositional phrases that appear in the language of mathematics (I mean mathematical English) such as *the inequations over O, symmetry about a certain point for various angles of rotation).* And using natural language as a metalanguage for natural language itself is likely to inflate the problems still further, since whatever shortcomings it has are compounded by the factor of self-reference – the metalanguage being a form of the same semiotic system that it is also being used to describe.

The problem of self-reference is a familiar one; nevertheless it is not the central issue. The real problem lies in the nature of language as object, and particularly the nature of lexicogrammar. It is not so much that language is not good for glossing with. The problem is rather that language is not good for being glossed.

Let us take, as an example, the category of Subject. This has always been one of the most obscure and controversial categories in western grammatical theory. Here is Jespersen on the subject (1909-43, Vol. III: 206-7):

> The subject cannot be defined by means of such words as active or agent; this is excluded by the meaning of a great many verbs, e.g. *suffer* (he suffered torture), *collapse,* as well as by passive constructions . . .
>
> How are we to distinguish between the subject and the object (or the objects)? The subject is the primary which is most intimately connected

> with the verb (predicate) in the form which it actually has in the sentence with which we are concerned; thus *Tom* is the subject in (1) 'Tom beats John', but not in (2) 'John is beaten by Tom', though both sentences indicate the same action on the part of Tom; in the latter sentence *John* is the subject, because he is the person most intimately connected with the verb *beat* in the actual form employed: *is beaten.* We can thus find out the subject by asking *Who* (or *What)* followed by the verb in the form used in the sentence: (1) Who beats (John)? Tom | (2) Who is beaten (by Tom)? John.
>
> There are also outward signs which sometimes, but not always, assist us in recognizing the subject, viz . . .

As if this was not confusion enough, the category of subject is subsequently used in the interpretation of further categories (1909-43, Vol. VII: 122-3):

> The generally indefinite character of sentences with *there* is . . . shown by the 'subject', which in the majority of cases is indefinite . . .
>
> Not infrequently, when the subject is seemingly definite, the underlying notion is really indefinite as shown by the indefinite article after *of:* Stevenson M 204 it was not long before there shone in at the door the ruddy glimmer of a lantern.

– showing incidentally that Jespersen also failed to understand the meaning of *the,* which is another ineffable category in the Grammar of English. To confine ourselves to Subject, however, here is a brief extract from a discussion by a grammarian concerned with a non-western language (Chao 1968: 69):

> The grammatical meaning of Subject and Predicate in a Chinese sentence is topic and comment rather than actor and action.

and this is accompanied by a footnote saying

> Note that we are using the terms 'topic' and 'comment' as semantic terms and not as grammatical terms as used by many writers in discussing Chinese grammar.

It is only a very short step from here to the assertion that the Subject 'has no meaning'. The implication is: whatever it is that is functioning as Subject in any instance has meaning as actor, or has meaning as topic; but as Subject it has none – the category of Subject has no meaning in itself. In this view, Subject is a grammatical function whose only function is to be a grammatical function.

Such a view is enshrined in the terminology, in the term 'grammatical Subject' (used for example in Sweet 1891); this is in contradistinction to 'logical Subject' (i.e. Actor) and 'psychological Subject' (i.e. Theme). Compare the later Prague school interpretation, with 'syntactic structure' (Subject – Predicate) contrasted with 'semantic structure' (Actor – Action) and with 'functional sentence perspective' (Theme – Rheme) (Daneš 1966). The Subject is conceived of as being 'purely' grammatical – that is, as arbitrary, not realizing any semantic features.

I have always rejected this view. In my opinion the category of Subject is no less 'meaningful' (semantically motivated) than other functional categories in the grammar. Nor in the last analysis is it any more obscure than other categories. It is just as impossible to arrive at an adequate gloss for functions such as Actor, Agent, Goal ('logical direct object'), Range ('logical cognate object'), Topic, Theme, New; or for grammatical features such as definite, passive, irrealis, equative, personal, human, modal – in fact more or less everything in the grammarian's pharmacopoeia.

It would be easy to pour scorn on the whole enterprise of trying to gloss such

categories at all, in a metalanguage drawn from natural language. But there are sound and respectable reasons for wanting to do so. The original impetus for semantic glosses on the grammar comes from the desire to explain the observed formal patterns: why is this particular noun in the nominative case, or in the genitive? Why is this element put first, or after that one? Why is this verb in the passive? To answer questions like these one has to postulate more functional, semantically oriented generalizations; these are then used to predict further instances that have not yet been observed.

Then subsequently the technique is extended to the interpretation of 'unknown' languages, either for descriptive or for pedagogical purposes. We can give an illustration again from Chao (1968: 448):

> A necessary condition for the use of jiann is that the first verb be for an event which happens to the 'actor' without his volition. Thus, there is no °mhojiann 'feel (by hand) for, so as to feel, – feel', since the act of feeling with one's hand is considered more active than the reception of the 'distant senses'.

A much more extended example would be Whorf's famous discussion of tenses (or, in his later term, assertions) in Hopi: factual or present-past (later reportive), future (later expective), generalized or usitative (later nomic) – which typically takes up half a page, but whose semantic and ideological interpretation is the subject of an entire article ('An American Indian Model of the Universe'). Such discussions typically involve implicit, or sometimes explicit, contrast with the language in which they are written; in this case, English.

More recently, there has evolved a third context for semantic glosses: research in text generation, in the framework of artificial intelligence. One project in which they play an essential part is the Penman project at the Informational Sciences Institute (see Mann & Mathiessen 1983; Mann 1983). In Penman the motive power is provided by the grammar, Nigel, which is a systemic grammar consisting of a network of some hundreds of options. At each choice point a Chooser is activated; the Chooser consults the environment (the Knowledge Base) for instructions on which way to go. The Chooser's questions are referred to an Inquiry Operator; and they take forms such as the following:

> Is this concept inherently multiple, i.e. a set or collection of things, or is it unitary?
>
> Is the process one which conceptually has some sort of entity which causes the process to occur?
>
> Does this represent a concept which the speaker expects the hearer to find novel, not previously mentioned or evoked, and thus does not expect the hearer to identify uniquely by reason of the attention which it currently holds, its inherent uniqueness in culture, or its association with an identifiable entity?

All such glosses are attempts to get at the grammar beneath the skin; and they may be supported by a variety of different beliefs. First, it may be assumed that all grammatical generalizations have some significance at a higher stratum; or alternatively, that some are simply housekeeping devices and have no semantic function. Secondly, those grammatical categories that are regarded as semantically significant may be thought of as universal, or as particular to the given language, or as particular to a given register, a functional variety of a language. (These would represent fairly well the respective views of Jakobson, Hjelmslev and Firth.) Thirdly, it may be held that every such category has one meaning that is common to all its manifestations, and the problem is to find the right semantic generalization to cover all cases;

or alternatively, that some categories at least are polysemous, so that their meaning varies in ways that are not predictable from the context (cf. Ikegami 1980: 59). Fourthly, there is a range of beliefs about the place of grammar, and the need to postulate some higher level semiotic system ('semantics', 'semology', 'the conceptual level', etc.) to which grammatical categories can be related in a systematic and in some sense 'natural' way. Positions taken on these issues may complicate the task of semantic interpretation: for example, if categories are assumed to be universal, and yet are established at an insufficiently abstract level.

But whatever beliefs are held about them, grammatical categories will remain ineffable. Some of the more recalcitrant ones are categories that Whorf originally called 'covert': 'having no mark other than distinctive reactances with overtly marked categories'. But by no means all are of this kind – there is nothing covert about definiteness in English, for example. The phenomenon we are concerned with has more to do with Whorf's follow-up notion of a 'cryptotype'.

Whorf remarks of these that 'they easily escape notice and may be hard to define, and yet may have profound influence on linguistic behavior' (1956: 92). Among cryptotypes in English Whorf cites gender, transitivity (of the verb), inherence (of the adjective), and various more delicate categories, such as that of verbs that may be phrasalized with *up*. There is, of course, a connection between the two senses in which Whorf is using 'crypto-': a category may be hard to define precisely because it is hidden from view. But hidden from whose view? It is not because they are hidden from the linguist that grammatical categories are hard to define; once the linguist has found them, the fact that they had escaped his notice ceases to matter. The significance of this concept of a cryptotype is that it is something that escapes the notice of the speakers of the language.

Franz Boas long ago drew attention to the unconscious nature of language, contrasting it in this respect with the other meaning systems of a culture; and although his observations have often been quoted, it seems to me that their significance is seldom fully taken into account. There is a fundamental relationship between the unconsciousness of language and the nature of its semantic categories. I have often pointed out, in the many years since I began the study of informal speech, that it is only in the most spontaneous, un-self-monitored kinds of discourse that a speaker stretches his semantic resources to the utmost (cf. Halliday 1966). This does not happen in formal speech; and it certainly does not happen in writing. It is in unconscious spoken language that we typically find the truly complex sentences, with their labyrinths of hypotaxis and all their projections and expansions, from which, while we blunder through such sequences often losing ourselves completely when we are engaged in the planned self-monitoring discourse of an academic lecture, we emerge in good order and with every node unravelled provided we are completely unaware of what we are saying and attending only to whatever it is we are involved in at the time. (That sentence is best taken orally, at high speed.) Our ability to use language depends critically on our not being conscious of doing so – which is the truth that every language learner has to discover, and the contradiction from which every language teacher has to escape.

Why is there this apparent contradiction, such that only when we cease to attend to the process of meaning can we ever master the ability to mean? The immediate cause is no doubt the dynamic nature of the medium – as with walking, or riding a bicycle: once you think about it you fall over, and you only succeed when you no longer have to try. But above and beyond this is a more abstract phenomenon, a specific property of unconscious spoken language which distinguishes it from all conscious discourse, spoken and written. While the complexity of conscious language is dense and crystalline, formed by a closely-packed construction of words and word clusters, the complexity of unconscious language is fluid and

choreographic. Conscious language achieves its creative force mainly by lexical means; and lexical items are semantically close to experience. Unconscious language depends much more for its creative force on grammar – and grammatical categories are far removed from experience. To quote Whorf again, grammatical categories 'represent experience, . . . but experience seen in terms of a definite linguistic scheme' (1956: 92).

The meaning of a typical grammatical category thus has no counterpart in our conscious representation of things. There can be no exact paraphrase of Subject or Actor or Theme – because there is no language-independent clustering of phenomena in our experience to which they correspond. If there was, we should not need the linguistic category to create one. If language was a purely passive partner, 'expressing' a 'reality' that was already there, its categories would be eminently glossable. But it is not. Language is an active participant in the semogenic process. Language creates reality – and therefore its categories of content cannot be defined, since we could define them only by relating them to some pre-existing model of experience, and there is no model of experience until the linguistic categories are there to model it. The only meaning of Subject is the meaning that has evolved along with the category itself.

Meaning is formed in action; people create meaning, by exchanging symbols in shared contexts of situation. The symbols evolve along with the meanings; there is just one process taking place here, not two, though we have to interpret it as if it was two. We cannot observe this process as it took place in the history of the community, since that would be coextensive with the evolution of the human species. But we can observe it happening in the history of a human child. Semogenesis begins well before the mother tongue, as the infant creates his own protolanguage or 'child tongue': he constructs this symbolic system, in interaction with those who share in his meanings, for the twofold purpose of doing and thinking that characterizes all such systems; and in the same process he also constructs the objects of his action and his reflection. But the child tongue has its limitations, for both these purposes; so he moves into the adult mode, and takes over the mother tongue with its ready made grammatical categories. The symbols of the mother tongue, which have been around him from the start, now become his reality, at once a part of, and a key to, the complex phenomena of his experience. Language and culture are construed as one.

Does a child, then, know what a Subject is? We cannot ask him; nor can we set up a test situation to find out – if only because children, given an unnatural task, will respond with unnatural behavior. (It is not intended to suggest that there is any contrast here with adults. The problem lies again in the unconscious nature of linguistic processes, which adults cannot reproduce experimentally either.) Nevertheless it is clear, surely, that a child does know what a Subject is, because he uses one a hundred times a day. We only have to listen to a five-year-old in ordinary, real life situations, and we will hear the categories of the grammar that we find most difficult to explain, deployed in their appropriate semantic roles.

What we observe, of course, even with a tape recorder on permanent duty, is only a limited set of instances. We have to infer the system that lies behind them; for language (if I may be allowed to invert Chomsky's famous dictum) is an infinite system that generates only a finite body of text. But what we can observe is already very convincing.

If I assert that a five-year-old knows what a Subject is, it is because I have listened to children for many years, and heard them talking in clauses which have Subjects. In my own detailed record of one particular child, there are about 2,500 of them; but since child language studies became fashionable there has been an abundance of such material available, if one does not feel one can rely just on one's

listening. Now, any one of these clauses could have had the appropriate Subject by chance. Moreover, since no linguistic category is chosen in isolation – in choosing the Subject one is always making other choices besides (and this will apply whatever category is used as illustration) – in any one instance we could always claim that the appropriateness of the Subject was a consequence of some other choice. But if countless children produce countless clauses each with an appropriate Subject, the probability that this represents a systematic choice on the part of the speaker amounts to a virtual certainty, because there is no other **single** choice with which the Subject is always associated.

Can we also find a critical instance in which the category of Subject is highlighted? It can never be insulated from other meaningful choices, for reasons already given. But we can set up a pair of agnate clauses which differ primarily in respect of which element is selected as the Subject. Consider the following pair:

Why was that given to mummy now?
Why was mummy given that now?

These have the same transitivity structure: Goal/Medium *that*, Recipient *mummy*, Process *give*, Cause *why*, Time *now*. They have the same thematic structure, with *why* as Theme; and the same information structure, with focus of New on *now*. The only significant difference lies in the choice of the Subject: in the first example *that*, in the second example *mummy*.

We can display the Subject prominently by turning the clause into the declarative and adding a tag or response:

That was given to mummy now, wasn't it? – No it wasn't.
Mummy was given that now, wasn't she? – No she wasn't.

The Subject in English can always be recognized in this way: it is that element that turns up (in appropriate pronominal form) in the repeat. This not only enables us to identify the Subject; it also makes it clear what the Subject means, and why the speaker chooses that particular entity to figure as Subject of the clause. That is the entity that he wants to appear in tag or response – or rather, the entity that he wants to carry the meaning that is realized by its **potential** for appearing in tag or response, whether or not any tag or response is actualized. (Compare the reason for putting something in clause-final position: so that it carries the meaning that is realized by its potential for bearing the unmarked focus of information, whether or not that is where the focus actually falls.)

How does this relate to the speech of our five-year-old? A particular child is unlikely to produce any particular wording; but he could produce instances of either of these structures if the occasion arose. He would not, of course, produce them one after the other, since we do not talk in paradigms; whichever occurred would be in its appropriate syntagmatic environment. On the other hand, I doubt whether he could produce either of them under test conditions, or discriminate between them if presented to him; but then neither could an adult speaker. The fact that we cannot bring to consciousness the difference in meaning between two related forms which we nevertheless keep systematically apart tells us nothing about the semantics of the language.

It is not really surprising that the child controls the semantics and grammar of the Subject in his language. Assuming that he has been actively listening for some 3½ out of his five years, and assuming that he has been exposed to a tally of about 200 Subject-featuring clauses a day (and these are very modest assumptions), then he has heard anything up to a quarter of a million Subjects in the course of his life. All of these, moreover, have been functional in some context of situation.

If we take note of Jay Lemke's observation that 'meaning is created at the

intersection of the material and the discursive', and put it together with Whorf's 'sense of the cumulative value of innumerable small moments', we will not be surprised that a grammar can be learned in this way. I have been insisting for many years that a child's semiotic experience is extraordinarily rich – not at all the farrago of featureless fragments that we are taught spoken language consists of! Much of it comprises repetitions, like *Come and have your lunch;* but repetition is itself a semogenic factor, since it allows the child to model the language as a probabilistic system. Every instance, whether repetitive or unique, is a configuration of meanings of different kinds, available to the child both for storage as coded text and as evidence for construing the system that lies behind. There is no mystique in a child's ability to construct a language on the evidence of what he hears.

But that which makes the category of Subject learnable is also that which ensures that it will be ineffable. How can we generalize, in a single definition, or even in an article or a book, the whole of the shared experience of Subjecthood of the adult speech community – or even that of one novitiate member of it?

If a language had been a designed system, matters would have been different. Designed systems are designed so as to be effable; in fact, effability is a necessary condition of design. You cannot design unless the principles can be made explicit. But a language is an evolved system; and evolved systems rest on principles that are ineffable – because they do not correspond to any consciously accessible categorization of our experience. Only the relatively trivial meanings of a natural language are likely to be reducible to (meta-)words. Fundamental semantic concepts, like those underlying Subject, or Theme, Actor, New, definite, present, finite, mass, habitual, locative, are, in an entirely positive way, ineffable.

Can we then do nothing to make such categories explicit? If we try to describe any semiotic system 'from below', first reifying the forms through which it is expressed and then asking what these forms mean, we will simply get a relabelling of each formal category. The description will be a gloss on its name (since the name was an attempt to capture its meaning in the first place), together perhaps with a gloss on its relationship to other categories that were themselves formally established. To pursue our earlier example from grammar, a noun will be defined as 'that which names a person, living being or inanimate object (gloss on the name 'noun'); which can be a participant in an action or event (gloss on the expression 'subject or object of a verb'), and may be single or multiple (gloss on 'singular or plural in number')'.

This can always be done – whether or not it is useful – with categories like that of 'noun', which are classes: they are the 'output' categories of the grammar, lists of items that can figure at particular places in the syntagm. A category such as 'noun' makes no direct contact with semantics, other than in this restricted sense of semantics as a commentary on the meaning of the forms. But the 'input' categories of the grammar – the systems, such as 'mood'; their features, such as 'indicative'; and the functions, such as 'Subject' – cannot be so readily glossed in this way: they relate directly to the semantic system that is 'above' the grammar, that which interprets the ideologies of the culture (Lemke's 'activity systems' and 'thematic systems'), and codes them in a wordable form.

To understand these categories, it is no use asking what they mean. The question is not 'what is the meaning of this or that function or feature in the grammar?'; but rather 'what is encoded in this language, or in this register (functional variety) of the language?' This reverses the perspective derived from the history of linguistics, in which a language is a system of forms, with meanings attached to make sense of them. Instead, a language is treated as a system of meanings, with forms attached to express them. Not grammatical paradigms with their interpretation, but semantic paradigms with their realizations.

So if we are interested in the grammatical function of Subject, rather than asking 'what does this category mean?', we need to ask 'what are the choices in meaning in whose realization the Subject plays some part?' We look for a semantic paradigm which is realized, inter alia, by systematic variation involving the Subject: in this case, that of speech function, in the interpersonal area of meaning. This recalls Firth's notion of 'meaning as function in a context'; the relevant context is that of the higher stratum – in other words, the context for understanding the Subject is not the clause, which is its grammatical environment, but the text, which is its semantic environment.

For this very reason, it is difficult to give a brief illustration. But here is a piece of dialogue, that has been doctored so as to keep it short, which displays something of the meaning of the Subject. The speaker is telling a story of a sporting experience, and he says:

> I caught the first ball, I was beaten by the second; the third I stopped – and by the fourth I was knocked out.

Let us identify the different grammatical variables, and establish clause by clause what has changed and what has remained constant.

	Subject	Actor	Theme	
1	I	I	I	Subject = Actor = Theme
2	I	ball	I	Subject = Theme; ≠ Actor
3	I	I	ball	Subject = Actor; ≠ Theme
4	I	ball	ball	Actor = Theme; ≠ Subject

The speaker keeps the listener's attention by varying the Theme and the Actor:

	Theme	Actor
1	about me ('I . . .')	what I did ('did you?')
2	about me ('I . . .')	what happened to me ('were you?')
3	about the ball ('the 3rd')	what I did ('did you?')
4	about the ball ('by the 4th')	what happened to me ('were you?')

Clause 1 has the speaker in all three functions of prominence: interpersonal *(I* as Subject), ideational *(I* as Actor) and textual *(I* as Theme). Clause 2 is marked by ideational modesty (this is what happened to me, not what I did), and clause 3 is marked by textual modesty (now I'll tell you about the ball, not about myself). In clause 4, the speaker gains further merit by ending on a doubly modest note, in which he is neither the Actor nor the Theme.

But in regard to the speech function, the picture is quite different. The speaker retains himself in the role of Subject throughout. There is no sign here of interpersonal modesty; the assertion is made to rest on *I* every time, and the listener's response, correspondingly, must always have a *you* in it – *Did you?, Were you?* In other words, every step in the narrative has to be validated by reference to 'me'; and that is the meaning of Subject. 'Subject' is not the same as 'Actor'; nor is it the same as 'Theme'. But it is far from being devoid of meaning.

It is quite possible to have a clause in which all three of these functions are dissociated from one another:

that teapot	my aunt	was given	by the duke
Theme	Subject		Actor

This helps to give a sense of the different meaning of each. This particular one is made up; but the structure of which it is an instance is entirely familiar. (Except perhaps to philosophers of language, who tend to be disturbed by departures from the ideal of *John hit Paul.* Once when I was giving a seminar, a participant refused to

accept that such a clause was possible in English, with a non-Subject nominal in fronted position. So I asked him a question – I forget what the question was, but any question would have served; and when he answered, I said "Yes – that answer I've been given by other people too". Needless to say, he raised no eyebrow; he did not notice that I had used a clause with the structure he had just rejected as impossible. When I pointed this out to him, he seemed to think I had cheated – perhaps by bringing real language into the discussion.) Obviously, there would be no sense in dissociating the Subject from both Actor and Theme if it did not embody a meaning of its own, distinct from either of the other two.

What I have been trying to show with this illustration is that while, with a category like Subject, it is impossible to answer the question 'what does it mean?', this does not signify that it has no meaning. The problem of ineffability is common to all grammatical categories; there are various reasons why some may seem less problematic than others, but it is an illusion to think that any can be exhaustively defined. And this, as I remarked above, is not because of the shortcomings of natural language for serving as a metalanguage, real though such shortcomings are. Rather the converse: it is the very richness of natural language, its power of distilling the entire collective experience of the culture into a single manageable, and learnable, code that puts its categories beyond the reach of our conscious attempts at exegesis.

This leads us back to the question of the *Grundbedeutung*. The categories we have been considering have been categories of the grammar: grammatical systems and structures, and their component features and functions; and since grammar is the central processing unit, where meanings of different kinds are brought together as wordings, we expect its categories to be valid for the language as a whole. All uses of English involve 'Mood : Subject + Finite', or 'tense : past/present/future'; and these are assumed to be in some sense 'the same thing' in all contexts, since otherwise we would not be looking for definitions of them.

No such constraint figures in our conception of semantics. The grammar is the grammar: it has internal organization, of a metafunctional kind; it has some special purpose sub-grammars; and it has considerable indeterminacy – but there is such a thing as 'the grammar of English'. We do not operate with a separate grammar for each register. No doubt we can also conceive of such a thing as 'the semantics of English'; but we also feel that (at least at the present state of our knowledge) it is not counterproductive to envisage a more restricted domain for semantic generalizations, and to operate with semantic sub-systems each relevant to a specific universe of discourse.

In principle, the domain of a semantic description may be anything from 'the whole language' down to a single text. At one end of the scale, I have found it useful to set up a semantic system relating to just one dialogue of 35 words long; this was a child – adult dialogue, and the purpose was to explore what meaning potential the child must have in order to be able to construe such a discourse. Geoffrey Turner's (1973) semantic networks define a rather broader range of texts, such as mother – child control patterns in specific experimental situation types. More general again is Ruqaiya Hasan's (1983) 'message function' network, which describes spontaneous interaction between children and parents, for the purpose of investigating the development of children's learning patterns. At the other end of the scale, J. R. Martin's (1983) conjunction networks are like grammatical networks in that they are set up for the language as a whole.

When we describe semantic systems, we are saying what it is that 'preselects' the grammatical categories: what choices in meaning call on what features in the grammar for their realization. It is by this process that the grammatical categories are defined; when this is done, there is no need to gloss them further. Once the semantic system is made explicit, it can only be misleading to attach separate

semantic descriptions as glosses to the categories of the grammar.

At the same time, if the semantic system is set up only for a restricted domain, some particular register variety, then the meanings of any grammatical categories that figure distinctively in that variety will appear thereby less ineffable. For example, we have no general definition of 'future' as a category of English grammar; its effability measure is decidedly low. But when this category figures in the register of weather reporting and forecasting, the semantics of that variety makes only limited demands on it, for realizing the meanings that are engendered by that particular context. The category of 'future in the register of weather forecasting' is much less resistant to being glossed than the general category of 'future in English'.

This interpretation of semantic systems is a kind of functional semantics, and it derives from the twentieth century functional semantic traditions of Boas, Sapir and Whorf, of Malinowski and Firth, and of Mathesius and the Prague school. These were three groups of scholars with very different orientations, but their work was complementary in significant ways. While each had a well-rounded view of language, they emphasized, respectively, the ideational, the interpersonal and the textual aspects of meaning.

For Malinowski, language was a means of action; and since symbols cannot act on things, this meant a means of interaction – acting on other people. Language need not (and often did not) match reality; but since it derived its meaning potential from use, it typically worked. For Whorf, on the other hand, language was a means of thought. It provided a model of reality; but when the two did not match, since experience was interpreted within the limitations of this model it could be disastrous in action – witness the exploding petrol drums. Mathesius showed how language varied to suit the context. Each sentence of the text was organized by the speaker so as to convey the message he wanted at that juncture, and the total effect was what we recognize as discourse. Their work provides the foundation for a systematic functional semantics which enables us to bridge the gap between the context of culture and the language, and between the context of situation and the text. This is how we can become aware of the meaning of grammatical categories.

As a final step, let us summarize some of the alternative principles that can be adduced for talking about the ineffable:

A. Metonymic: the use of some semiotic system as a descriptive metalanguage (the 'parasemiotic' principle)
   1. Parallel semiotics within the same language
      (a) everyday language as folk linguistics (possible where there is a shift of metafunction but probably not otherwise)
      (b) openended definitions from theories about language (not theories *of* language), e.g. rhetoric
      (c) self-contained, technical systems of definition within linguistics itself, e.g. Hjelmslev's
   2. Translation and commentary in another language, such as Whorf on Hopi: 'A first approximation to the meaning of the . . . projective is "does with a forward movement" ' (1956: 103) – a (presumably non-existent) example would be a grammar of English in (non-westernized) Hopi
   3. Deaf sign as metalanguage: the visual modality of sign gives it a different semiotic potential (the semantic field of a sign is in general greater than that of a lexical item; the sign is susceptible of a greater range of modification; there is greater potential for iconicity)
   4. Non-linguistic semiotic systems
      (a) representational: some meanings, at least, can be depicted,

e.g. Kluckhohn & Leighton on Navaho (1962: 284): two forms of a verb, one meaning 'doing repeatedly to the same Goal', the other 'doing repeatedly to different Goals', 'glossed' by two picture series each of three events, one person kicking another – the one being kicked either falls lower and lower (same person kicked repeatedly) or stays in the same posture (different person each time)

(b) Non-representational: e.g. music as metalanguage e.g. Chandola (1970: 145) suggests that many aspects of ragas can be compared with language, and gives an example of a musical pun – but music might lend itself more to glossing dynamic aspects of the grammar such as information structure

B. Metaphoric: the use of theoretical models

1. Interpretative metaphors for particular features of language; e.g. Whorf's interpretation of assertion in Hopi as 'two grand cosmic forms' (1956: 59n.), transitivity and ergativity as complementary modes of representing experience
2. A general theory of register and genre, from which semantic categories can be derived in a principled way (Martin, in press)
3. General theories of meaning in language, e.g. Lemke's (1984) concept of 'making meaning' in terms of activity structures and thematic structures, and of 'metaredundancy'
4. Perhaps as a combination of the metaphoric and the metonymic we should cite Eco's recent novel *The Name of the Rose* (1980/83), where instead of using language to talk about literature he turns the tables and uses literature to talk about language

Whether or not language has the property that is sometimes claimed for it, of being able to interpret all other semiotic systems (and I see no reason to assume that this is so), there are certainly limitations on the ability of language to interpret itself. We may have to move outside language, to some parallel or higher order semiotic which, since it is not itself language, can be represented in language and then refracted to become a metalanguage for representing language. All such interpretation is ultimately circular; but in linguistics, we have tended to operate within circles that are pathologically small. Until we can create a greater distance between the semiotic object and the metasemiotic, grammatical categories are bound to remain ineffable.

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INAUGURAL LECTURE

LANGUAGE IN CONTEXT

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0. Introduction

The theme of this Inaugural Lecture is that a theory of the psycho-socio-cultural contexts---i.e., the natural situations---in which language is used has direct bearing on a theory of language. It throws some light on crucial aspects of language so far either totally disregarded or, in my view, poorly accounted for by linguists who insist on focusing exclusively on language. This position is shared by Dell Hymes when he states that "the key to understanding language in context is to start not with language but with context" (see Hymes 1972, p. xix). My goal here is to illustrate this position---unorthodox among linguists---with theoretical considerations pertaining to my own work. (For similar approaches, see Hymes 1974; and Erickson and Schultz 1977.)

I view human behavior as organized in terms of two major principles: (1) meaning, i.e., the significance attributed to aspects of the world around them by the members-of-the-culture; and (2) periodicity, i.e., the patterning of the actualization of behavior. The following discussion is presented in terms of these two principles of organization. First, I examine the relevance for the linguistic system of the theoretical frame of reference I have elaborated for the accounting of behavior in face-to-face interaction (see Mathiot 1981 and 1983). Then I examine the relevance of preliminary work done on prosodic phenomena (see Mathiot and Carlock 1982 as well as on-going research with the musician Mirka Stratigopoulou).

I want to insist that my purpose is not to justify my theoretical frame of reference. Rather it is to illustrate the position adopted here that any theory of the natural contexts of use of language has direct bearing on a theory of language.

1. A Meaning-Based Theory of Face-to-Face Interaction and its Relevance for the Linguistic System

1.1. The Theory proposes a major distinction between two orders of constructs, "Frame-of-Reference" constructs and "Form-Meaning Co-Variance" constructs.

Frame-of Reference Constructs correspond to the notions the members-of-the-culture hold about reality---more specifically, the aspects of reality they associate with a type of occasions---which they bring to bear on their apprehension of particular instances of this type of occasions. These notions---i.e., meanings---can be said to "inform" on-going behavior in particular instances of occasions of interaction.

Form-Meaning Co-Variance Constructs display the systematic association of form and meaning in on-going behavior. In other

words, meanings together with forms can be said to be an "intrinsic" part of on-going behavior. The linguistic system is one of the form-meaning co-variance constructs.

The distinction proposed between frame-of-reference constructs and form-meaning co-variance constructs offers a further specification of the basic tenet that meaning is one of the two major organizing principles of human behavior. This distinction has special relevance for the linguistic system. It accounts for the way in which reference to the outside world made through the linguistic system is complex rather than simple. The linguistic system is not viewed as referring directly to the outside world. Rather it is presented as relating to the outside world through notions---frame-of-reference constructs---that mediate this relation. This position is also taken by Seiler and his group who write: "... all linguistic research is based on three (not two) parameters: (1) linguistic form; (2) their meanings; (3) that which is referred to by (1) and (2). To say that (3) is in the outside world would certainly be inadequate; it must be mediated by a mental instance" (see Seiler et al 1983).

1.2. Two orders of frame-of-reference constructs are differentiated: Experiencial Constructs and Existential Constructs.

(1) Experiencial Constructs account for the experiencing of reality by the members-of-the-culture, specifically, for how many dimensions enter into the characterization of their experience itself. Two orders of Experiencial Constructs are proposed, States of Consciousness and Viewpoints. States of Consciousness account for the types of experience differentiated by the members-of-the-culture. Examples are "real life" as opposed to "fantasy life". Viewpoints account for the differential perspectives adopted by them in attributing meanings to on-going behavior. Examples of commonly adopted Viewpoints are: skill-based viewpoints, namely, various technical viewpoints corresponding to varying degrees of expertise as opposed to the layman's viewpoint; attitude-based viewpoints, namely, emotional involvement as opposed to emotional neutrality.

I see not so much an equivalence as a parallel between, on the one hand, states of consciousness and the traditional notion of "truth value"; on the other hand, viewpoints and the traditional distinction between denotative meanings and connotative meanings. The parallel stems from shared awareness of the complexity of semantic data and the need, therefore, to differentiate them. The positions adopted are radically different. The traditional position consists in proposing notions that limit the field of inquiry by excluding other possibilities. My position consists in differentiating several possibilities in order to explore all of them in turn and systematically.

Thus, the notion of "truth value" recently adopted by linguists from philosophers of language limits the inquiry to that of one state of consciousness, the "real" world, whereas I propose to explore all states of consciousness differentiated in a given culture.

The distinction between denotative and connotative meanings adopted by linguists and ethnolinguists also from philosophers of

language, is usually presented as the justification for limiting the inquiry to that of denotative meanings. Connotative meanings are viewed as unknowable. My position is to differentiate viewpoints taken by the perceiver rather than intrinsic types of meanings and, here again, to explore all of them in turn and systematically.

In summary, in order to deal with the complexity of the meanings associated with language, linguists as well as ethnolinguists have borrowed notions from philosophers of language that justify their limiting their inquiry to some aspects of these meanings while excluding others from consideration. I propose an inventory of all pertinent aspects of meaning as a first step toward a systematic investigation of all these aspects.

(2) Existential Constructs account for reality as experienced by the members-of-the-culture, specifically, for the "in-the-world phenomena" they differentiate. A single order of Existential Constructs is postulated, Conceptual Domains. Examples of Conceptual Domains which appear always to be informing behavior in face-to-face interaction are the identity of the participants (a notion closely connected to that of "role"); the classification of the activities taking place; the type of occasion it is.

I view conceptual domains as the "semantic reservoir" of the culture. By this I mean that conceptual domains constitute a common pool of abstract meanings. Specific meanings related to these abstract meanings become manifested not exclusively through the linguistic system but rather through a variety of forms of cultural behavior. The above is how I account for the often discussed relation between language and the rest of the culture (see Mathiot 1979, especially pp. 317-9).

In addition, the notion of conceptual domains has direct bearing on (1) the organization of the lexicon; and (2) the specification of the relation between grammatical meanings and lexical meanings.

I propose that the lexicon is an inventory of terms referring to aspects of cognitive domains. By this I mean that cognitive domains have an organization. Thus, a given domain has a variety of interrelated aspects, or subdomains. The lexicon is a semiotic inventory that reflects the organization of cognitive domains.

In addition, the notion of conceptual domains provides the common grounds within which to inquire into the relation between grammatical meanings and lexical meanings (see ibidem, especially pp. 319-21).

1.3. Two orders of form-meaning co-variance constructs are differentiated: building-block constructs and specific constructs defined in terms of the joint utilization of the above.

(1) Three orders of building-block constructs are differentiated. They are: on the one hand, modalities of signaling and modalities of patterning; on the other hand, functions.

Modalities of signaling and modalities of patterning offer the two sets of coordinates specifying the basic types of constructs being differentiated. Modalities of signaling correspond to the differential ways in which form relates to meaning. Modalities of patterning correspond to the differential ways in which the form-

meaning co-variance is realized. Functions offer the criteria serving to define individual constructs pertaining to the various types specified in terms of these two sets of coordinates.

Two basic modalities of signaling are distinguished: a semiotic modality and a non-semiotic modality. The criterial characteristic differentiating these two modalities is whether the relation between form and meaning is "mediative" or "self-reflexive". (For a detailed discussion, see Mathiot 1981 and 1983.)

Three basic modalities of patterning are distinguished: on the one hand, structures and systems; on the other hand, properties and processes. (For a detailed discussion, see Mathiot, 1981 and 1983.)

Functions are high-order meanings inferred from the specific meanings attributed to behavior by the members-of-the-culture. Functions serve to define individual constructs pertaining to the various types specified in terms of the two sets of coordinates proposed here, the modalities of signaling and the modalities of patterning. Thus the referential function, one of the symbolic functions, serves to define the linguistic system.

(2) Two orders of specific constructs are differentiated on the basis of the joint utilization of the constructs mentioned in (1) further above. They are Field Structures and Communicative Tools. In the cases investigated so far, the Field Structures are non-semiotic structures. The Communicative Tools are semiotic systems, either full systems or inventories. (For a detailed discussion of the distinction between structure versus system, on the one hand, full system versus inventory, on the other hand, see Mathiot 1981 and 1983.)

Two Field Structures are differentiated on the basis of two occasion-organizing functions: the Programmatic Function serves to define the Activity Structure; the Interaction-Flow-Characterizing Function serves to define the Interaction Climate Structure. The two Field Structures are postulated on the basis of the members-of-the-culture's distinction between the obvious ("what's going on") and what lies behind the obvious ("what's really going on"). For the members-of-the-culture the obvious corresponds to the activities performed by the participants. These activities are further specified by them as what the participants "do and say". The non-obvious corresponds to the participants' psychological states, i.e., what and how they "feel" as they engage in these activities. The participants' psychological states are viewed as entering into the constitution of the "climate" that characterizes interaction within a given occasion. (For a detailed discussion see Mathiot 1981 and 1983.)

An as yet indeterminate number of Communicative Tools are differentiated on the basis of a set of symbolic functions. Four such functions are: the Referential Function; the Expressive Function; the Regulatory Function; and the Co-Presential Function.

By Referential Function is meant information about the various orders of phenomena distinguished by the members-of-the-culture. This function serves to define the Linguistic System, the Kinesic System (i.e., all the speech-accompanying body movements) and the various Emblematic Inventories (i.e., the various gestures which

convey specific referential meanings without speech, such as "good bye").

By Expressive Function is meant information about the on-going affect states of the participants. This function serves to define various Affect Systems (such as, possibly, a Paralinguistic system and a Postural system) as well as Inventories (such as Exclamations).

By Regulatory Function is meant information about the maintenance, monitoring and control of the ongoing interaction flow. This function serves to define various interaction-flow-control inventories, such as Phatic Expressions and Punctuations.

By Co-Presential Function is meant information about the participants' degree, and/or kind, of active participation in on-going interaction. This function serves to define Spatio-Orientational Systems, i.e., the various ways people position themselves vis-a-vis one another when they are in face-to-face interaction.

It is proposed that the Field Structures are the base constructs accounting for on-going behavior in face-to-face interaction. They provide the contexts within which the Communicative Tools are utilized by the participants as customary means of conveying information. In other words, a cultural event, such as a conversation or a lecture, is viewed as having two underlying Field Structures. The latter are viewed as constituted in part by aspects of semiotic systems and in part by other types of behaviors.

This view makes it possible to specify three types of participation of the linguistic system in the make-up of, or vis-a-vis, other constructs. These are its ancillary participation, its tool participation and its adjunct participation.

By ancillary participation is meant the participation of aspects of the linguistic system together with other types of behaviors in the make-up of other semiotic systems. Examples are: exclamations, such as "Oh, hell!", "la barbe!" (for a detailed discussion, see Goffman 1978); punctuations, such as "you-know", "O.K.", "tu vois".

By tool participation is meant the participation of aspects of the linguistic system together with other types of behavior in the make-up of the two Field Structures. An example is the part played by language in the search for, and development of, topics of conversation. Note that the tool participation of the linguistic system replaces the notion of discourse as currently used in the linguistic literature.

By adjunct participation is meant the co-occurrence of aspects of the linguistic system with other semiotic systems which are dependant on it for their actualization. These semiotic systems are commonly said to "accompany" the utilization of the linguistic system in occasions of interaction. Examples are: Affect Systems as manifested through intonational configurations; Kinetic Systems as manifested through gesticulations.

2. A Theoretical Approach to Prosodic Phenomena and its Relevance for the Linguistic System

By prosodic phenomena is meant both any type of discontinuity in the vocal flow (such as pauses or disjunctions between individual pulsations) as well as several types of continuous phenomena:

pitch: the relative height of the voice over a sequence of pulsations; duration: the relative length of individual pulsations or sequences of pulsations; tempo: the relative speed with which a sequence of pulsations is actualized; intensity: the relative strength with which individual pulsations are articulated; and loudness: the relative volume of the voice over individual pulsations or a sequence of pulsations (compare to Fónagy 1983).

I propose that prosodic phenomena are organized on the basis of the two orders of principles postulated for the organization of human behavior, meaning and periodicity (see Introduction, further above).

Meaning serves to specify two functions: the referential function and the expressive function. The referential function serves as a criterion to specify when pitch, duration and intensity are phonemic, i.e., part of the linguistic system. In this case pitch is called tone; duration is called length; and intensity is called stress. The expressive function serves as a criterion to assign intonational configurations conveying different types of affect (e.g., anger, pleasure) to Affect Systems.

Periodicity, when applied to the audible aspect of behavior in interaction, serves as a criterion to specify the Kinetic Organization of the Vocal Flow. By this is meant the accounting of the kinetic qualities of the flow, whether it is connected or disconnected, regular or irregular, smooth or jerky, etc. Two interrelated kinetic properties of the vocal flow are Rhythm and Synchrony (see Mathiot and Carlock 1982).

Note that nonvocal aspects of behavior can also be viewed from the standpoint of their kinetic organization, and that the two kinetic properties, Rhythm and Synchrony, also apply to them. In other words, the Vocal Flow is but an aspect of the total Behavioral Flow.

The relevance for the linguistic system of this approach to prosodic phenomena is dual. It makes it possible to specify, on the one hand, what is a part of the linguistic system and what is not; on the other hand, what the actualization of the linguistic system in behavior is a part of.

(1) Thus, tone, length and stress are phonemic, and, consequently, a part of the linguistic system. Intonation configurations conveying affect are associated with the linguistic system but they are not a part of it. They are a part of Affect Systems.

(2) The behavioral actualization of the linguistic system is embedded in the Vocal Flow, together with other vocal phenomena, such as laughter, exclamations, silences. In addition, since the Vocal Flow is linked to other types of flow phenomena through sharing the same two properties of Rhythm and Synchrony, this approach also shows how the behavioral actualization of the linguistic system is embedded in behavior at large.

3. Summary

The point of this paper was to illustrate what theoretical insights about the linguistic system are gained from a theoretical consideration of its natural contexts of use. Two orders of insights can be differentiated on the basis of the two principles of organi-

zation postulated for human behavior, meaning and periodicity.

The first order of insights includes:

(1) A specification of the relation of the linguistic system to the outside world as mediated through experiencial constructs (states of consciousness and viewpoints) and existential constructs (conceptual domains).

(2) A specification of the relation of the linguistic system to the rest of the culture through the notion of conceptual domains as the semantic reservoir of the culture.

(3) A specification of the relation of the linguistic system to other semiotic systems through two types of participation, ancillary participation and adjunct participation.

(4) A specification of the relation of the linguistic system to what it is used for in interaction through its tool participation in the make-up of the Field Structures.

The second order of insights concern the embedding of the linguistic system in the Vocal Flow, itself an aspect of the entire Behavioral Flow.

These insights are displayed in Table 1.

TABLE 1: Theoretical Insights Gained about the Linguistic System

Meaning as the Organizing Principle of Human Behavior				Periodicity as the Organizing Principle of Human Behavior
Relation of linguistic system to outside world as mediated through:	Relation of linguistic system to the rest of the culture:	Relation of linguistic system to other semiotic systems through:	Relation of linguistic system to what it is used for in interaction:	
states of consciousness and viewpoints + conceptual domains	conceptual domains as the "semantic reservoir" of the culture	(1) ancillary participation in make-up of other semiotic systems and (2) adjunct participation vis-a-vis other semiotic systems	tool participation in make-up of the Field Structures	embedding of linguistic system in Vocal Flow, an aspect of the entire Behavioral Flow

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INVITED LECTURE

FOUNDATIONAL ISSUES IN LINGUISTICS

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I am taking advantage of the invitation by LACUS to give an informal paper: I will present a statement of position based on a series of observations and opinions rather than a formal argument bolstered by the appropriate apparatus of quotations and evidence.

What my statement of position is addressing are those issues in linguistics which I consider foundational, where by foundational I mean those issues which touch upon the epistemological foundations of linguistics. Since more than one epistemological stance is present in current linguistics, the judgment as to what is foundational in the just defined sense depends on one's stance; thus, the basis for my observations and opinions will be my own epistemological stance which I presented in an earlier LACUS lecture (see Garvin 1978).

It will thus be no surprise that the issues which I consider foundational will not necessarily be the ones which stimulate the most debate among my colleagues. As a matter of fact, it has long been my view that there is a tendency in American linguistics (and in linguistics elsewhere, to the extent to which it is subject to American influences) to attribute foundational significance to some issues which I would not consider foundational -- I shall be concerned with some of this in the later portions of my paper. What I am addressing myself to, then, is in a very real sense the quality of the current theoretical debate in American linguistics.

In a paper presented to the San Francisco Annual Meeting of the LSA in 1969 (Garvin 1970) I listed six issues as crucial to an understanding of the theoretical positions that were then current in linguistics: 1) The epistemological basis of linguistics (mentalism vs. mechanism; rationalism vs. empiricism); 2) The aim of linguistics (explanation vs. description); 3) The relation of method to theory ("discovery procedure is not -- or is -- a reasonable goal for linguistics"); 4) Linguistic universals and universal grammar; 5) Observable behavior vs. underlying system (langue/parole; competence/performance); 6) Creativity in language.

I propose to examine the extent to which these issues are still alive in today's theoretical debates and what theoretical positions are taken to them, as well as what new issues, if any, have emerged since then.

One conspicuous difference between then and now must be noted immediately, even though it is perhaps too soon to try to assess its significance in terms of the question addressed in this paper: unlike 1969, today's linguistic debate is no longer in the shadow of the one overriding intellectual personality that linguists had to either agree or disagree with.

Earlier Issues Revisited.

1) The epistemological basis of linguistics. This issue (as specified above) is no longer much talked about. In the late 1960's, the memory of neo-Bloomfieldian mechanism was still fresh enough so that a mentalistic position would be shocking to some; a similarly shocking effect (and most likely for similar reasons) was created by the introduction of rationalism at the expense of empiricism (most conspicuously by Cartesian Linguistics; see Chomsky 1966). When occasionally this issue is raised these days, the reaction will most likely be "people are no longer interested in this kind of theoretical question". The issue most closely related to this is conceivably the one about naturalness versus abstractness; it is foundational in the sense that it addresses the epistemological issue of the kind of explanatory principle that is used. Whether it is comparable to the mentalism/mechanism, rationalism/empiricism issue, or whether it does not rather relate to the next point to be discussed here, is to some extent a "judgment call".

2) The aim of linguistics. Clearly, the victory of explanation over description has, if anything, become even more evident by now. However, both the things to be explained and the explanatory principles are these days viewed differently from before.

What is to be explained is no longer the human capacity for language in general, but why languages, or particular conditions in languages, are the way they are. The explanatory principles are no longer a form of logical deduction from the principles of competence and generativity, but a more varied collection of "natural" causes, such as the human tendency to simplify pronunciation, or the communicative needs arising from the speech situation ("pragmatics"). A salient example of this are Talmy Givón's "Explanatory Parameters of Language" (Givón 1979:3-4).

Often these explanations use "human nature" as an explanatory principle ("it is human nature to want to...", "it is against human nature to expect..."). The problem with human nature as an explanatory principle is that many of our notions about it are more likely matters of custom or folk belief (just think of what the women's movement has done to our notions about "male" and "female" nature); another problem is that it does not take into account cultural differences and consequently tends to be ethnocentric.

Given this recourse to assumed psychological factors in explanation, psycholinguistics is given a good deal of weight in current linguistic reasoning -- compare this to Postal's 1963 reference to "a non-existent field called 'psycholinguistics'" (Dallaire et al. 1963:10). My own reaction to principles of this kind is not necessarily that they are "wrong"(although often they are, given their ethnocentrism) but that they are not organized into a coherent doctrine and consequently can be called upon rather arbitrarily to bolster whatever explanation has already been chosen on other grounds.

My feelings about explanation rather than description as an aim for linguistics, especially as it is understood and practiced today, can be summed up in two arguments: 1) explanation is subjective inasmuch that an explanation is only valid so long as someone believes it -- if the explanation is countered with a flat "I don't believe your explanation", there is no way of making the explanation stand; 2) the quest for explanation encourages an emphasis on particular individual phenomena in languages rather than languages as structured wholes.

3) The relation of method to theory. The major question raised in regard to this issue at the time of my initially cited paper was that of discovery procedure. This was one of the early basic disagreements of Chomsky with the preceding neo-Bloomfieldian tradition (Chomsky 1957:50-3). As I see it, discovery procedure as a methodological tool was replaced by argumentation and reasoning from examples and counter-examples (cf. Soames & Perlmutter 1979).

Today, the unreasonableness of discovery procedure is no longer a "hot" issue. On the contrary, discovery procedure of some sort has regained a measure of respectability (see Shopen et al. forthcoming), but argumentation and reasoning from examples as introduced by the generativists has remained the major analytical tool.

Argumentation and reasoning from examples as the major methodological tool seems to me to be closely related to explanation as a major aim, but in its current rather than in its generativist version -- that is, the explanation not of the human capacity but of particular linguistic phenomena of various degrees of generality. Whatever explanation is given may constitute an alternative to an earlier one, and may have to be defended against a possible alternative one. Since the arguments in favor or against a given explanation are drawn from what I consider a relatively poorly organized collection of principles, much of the argumentation appears to me arbitrary and unconvincing.

The trouble with current reasoning from examples is that (for the same reasons as those applying to explanation and argumentation in general) no clearcut rules of evidence are stipulated:

data are adduced as evidence for a given contention whatever source they may come from. Thus, in a recent paper on a morphophonemic (or morphonological) phenomenon (which I will not cite in order to avoid the impression that I am attacking that particular author), in addition to the usual English, examples are cited from the following further languages: Chinese, Choctaw, French, German, Greek, Manchu, Sanskrit, Swedish, as well as a very brief mention of Albanian. The problem with this use of data from a large variety of languages as evidence is that examples are compared to each other without sufficient attention to the possibility that phenomena which on the surface are the same may have different value in different languages by virtue of belonging to different structures and occupying different places in these structures (is the English "Saxon genitive" the same phenomenon as the "genitive" in Finnish, given -- as a minimum -- the difference in the morphological structure of the two languages).

Another problem, which is also relevant to the discussion of universals and typology below, is that not enough attention (in my view) is paid to the quality of the data: examples from very poor analyses (such as missionary grammars) or even quite unreliable reports (for instance, by casual observers) are adduced as evidence together with thorough and reliable descriptions. This is often admitted in private conversations but not, of course, discussed much (if at all) in the literature; again, I shall refrain from citing precise examples to avoid the impression of attacking a particular work.

4) Linguistic universals and universal grammar. Universal grammar in the innatist sense of the "Aspects" model (cf. Chomsky 1965:27) is now accepted only by a minority (who by many are considered a "rearguard" of the transformationalist generation). Instead, the interest in linguistic universals is more likely to follow in the tradition of the earlier Greenberg volume (Greenberg 1963), with particular attention to implicational universals (which lend themselves particularly well to the method of argumentation). The latter interest is closely connected to the interest in "natural" explanation: often implicational universals (or implicational principles used in the establishment of universals) are used as explanatory principles. This seems to me at times to border on circularity: one gets the impression that the "explicandum" is used as an explanatory principle (again, no citation to avoid the appearance of accusation).

Current interest in universals, unlike the earlier one, is strongly linked to typological concerns. Clearly, one must applaud this renewed interest in typology, after it has lain dormant for a few linguistic generations. What bothers me in the current interest in typology is that it tends to be somewhat one-sided: most typological questions are addressed to only one basic factor, that of word order. Another aspect of the current interest I view critically is the tendency to use typology, like implicational

universals, as an explanatory principle for particular cases (most often in "diachronic syntax"), where the typological principles themselves still require adequate explanation (once again, I'll refrain from citations for the same reason as before).

5) Observable behavior vs. underlying system. Some distinction along these lines is considered significant both in the European structuralist tradition (langue/parole) and in the generativist tradition that I discussed in my earlier paper (competence/performance). The interest in this issue at that time was generated among others by the exclusion of "performance data" from the proper province of linguistics by most generativists of the period (linguistics deals exclusively with "competence"; "performance" falls within the purview of psycholinguistics).

The heat generated by this issue in its days seems to have been due to the rejection by the earlier Bloomfieldian tradition of an "underlying system" as "mentalistic"; regularity of patterning was recognized, but for many, the system itself would be more of an artifact of the analysis than an assumed underlying reality (for a discussion of this issue under the heading of "God's Truth" vs. "hocus-pocus", see Householder 1952:260). At present, a majority of linguists seem to recognize that indeed there is a difference between "language" and "language use", but in order to explain what language is like and how language works one has to draw upon the whole range of language use data, including not just "performance data" but also contextual factors and whatever other conditions may serve to "explain" a given linguistic phenomenon.

6) Creativity. Like the previous issue, this one also derives its significance from the reaction against the earlier neo-Bloomfieldian belief system: here the reaction is against the narrowing of the data base of linguistic analysis to a particular "corpus" only as some neo-Bloomfieldians had demanded; instead, linguistics must "explain" the "ideal speaker/hearer's" ability to produce an infinite number of grammatical sentences. Now that nobody wishes to limit linguistic analysis and the speaker's ability to produce an infinite number of previously unheard sentences is not seriously in question, the question of creativity has become a nonissue.

Where this question does in fact constitute an issue is in the study of child language development. Here, the problem is the role the factor of creativity plays in language acquisition: how much of the latter, and which aspects of it, are creative, how much and which aspects are rote learning. One way of raising the issue is to contrast the learning of grammar with that of vocabulary, another way is to talk about processing and memory in the acquisition process.

New Issue.

The one important new foundational issue that has arisen in the linguistic debate of the past ten years is that of the relation of synchrony to diachrony. In the neo-Bloomfieldian tradition, synchrony and diachrony were considered to be quite clearly separate (as shown by the clear distinction made between descriptive and historical linguistics), which incidentally is one of the main points of agreement between this tradition and the European structuralist tradition going back to Saussure. In the early days of generative linguistics, diachrony was ignored.

It is my impression that the introduction of this issue is due to the interest in "diachronic syntax" which characterizes much of current work. What makes it a foundational issue rather than just a case of change of interest is that the line between synchrony and diachrony is no longer as sharply drawn as before: diachrony has now become one of the "explanatory parameters" used in explaining general linguistic conditions (which in the Saussurean tradition might be considered "panchronic"). The most prestigious statement of this position is found in Joseph Greenberg's LSA Presidential Address "Rethinking Linguistics Diachronically" (Greenberg 1979).

This issue is clearly not isolated from the ones just discussed. It seems to be most particularly related to two of them, namely, issue #2: The aim of linguistics, and issue #4: Linguistic universals and universal grammar. The just mentioned introduction of diachrony as an "explanatory parameter" clearly pertains to issue #2, and the fact that the explicandum to be dealt with by diachrony as an "explanatory parameter" is most often a question of typology or universals clearly pertains to issue #4.

My own position is that this blurring of the distinction between synchrony and diachrony is a step backwards. I take this position because of my strong position in favor of the maximum differentiation of variables (see Garvin forthcoming). This contrasts with the preference for simplicity as a criterion to evaluate the merits of a particular proposed solution first brought into linguistics by Chomsky (1957:53-4) and still favored by most linguists.

As can be seen, I clearly feel that the current linguistic discussion does not strongly favor issues which I would consider foundational. Let me illustrate this impression of mine by citing and analyzing some of the issues presented as foundational in the current debate in syntax (taken from Prideaux 1982): A. The motivation for transformations; B. The autonomy of syntax; C. The role of context/discourse/pragmatics; D. The psychological reality of linguistic constructs.

Given the centrality of syntax in American linguistics since the early sixties (where until then the central place had been occupied by phonology), syntactic issues can well be considered representative of the kinds of issues that might be considered "linguistically significant" in general.

Let me now discuss this second set of issues.

A. Motivation for transformations. This issue is clearly an "artifact of the theory": if one doesn't accept transformations as an essential ingredient of the "syntactic component" of the grammar, the question does not arise.

There is, of course, an underlying foundational issue: must a grammar be a generative grammar in a nontrivial sense? By that I mean, can generativity be defined in some sense other than just maximal explicitness (cf. Chomsky 1965:4) which I consider the trivial case (see Dallaire et al. 1963:13), and if so, must a theoretical stipulation of grammar include a property of generativity defined in a nontrivial way? This issue does not seem to be much debated these days.

B. Autonomy of syntax. This question is also to some extent an "artifact of the theory": the issue seems to me to have arisen originally from the "schism" between the interpretive and the generative semanticists, where to the former syntax is an autonomous component of the grammar while to the latter syntax is closely linked to semantics (hence the term "semantax" used by some).

From a foundational standpoint, as I see it, this issue really touches upon three questions.

The first question is that of the definition of syntax. Is syntax the study of arrangements in general, i.e., of the arrangement of any and all linguistic (and perhaps even nonlinguistic) items (more or less in the spirit of Charles Morris' distinction between syntactics, semantics and pragmatics). Or is syntax (in linguistics) more particularly defined as the study of the relations between words, as opposed to morphology which is defined as the study of the internal structure of words.

The second question is the very deep one of whether or not any of the components (levels, strata) of language is autonomous. This in turn depends on the third question, which is: what is meant by autonomy -- is a component autonomous simply in the sense of being central and serving as the point of origin or reference of other components (as seems to be the case with syntax in the interpretive semantic frame of reference), does autonomy mean total independence (which does not seem to be a position taken by anyone but is nevertheless a conceivable inter-

pretation of the notion) or does it simply mean something like the earlier "separateness" of levels?

In regard to the first question, there seems to be (outside of introductory textbooks) no strong interest in defining syntax in the light of the two possible interpretations that I am suggesting; perhaps this is because many linguists would be equally tempted by both alternatives.

The third question, which is presupposed by the second, seems to be answered by most linguists in the sense of the first possibility, centrality and point of origin or reference. Separation of levels is no longer the "hot issue" it was in the fifties. The argument then seems to revolve around whether syntax is this central point, or whether semantics is. Again, I am tempted to consider this argument an "artifact of the theory", because it is based on a theoretical position which takes syntax and semantics to be two separate components of the linguistic system. This latter view in my opinion touches upon what I hold to be the underlying foundational issue: what are the components (levels, strata) of the linguistic sytem, and on what grounds are they differentiated from each other? (In my own frame of reference, there is no separate "semantic" level, since I hold that there is a form/meaning co-variance on all levels of language; see Garvin 1978:339).

Whether or not autonomy is viewed in the sense of centrality and point of origin or reference, the second question should be viewed in the framework of the broader question of whether or not any aspect of the reality of language is in any sense autonomous of any other. Current opinion seems to be swinging in the direction of pretty well general interdependence of all aspects of language, and I certainly agree with that. Given this basic position, it would be difficult to argue in favor of the "autonomy" of any aspect of language, including syntax (however defined).

Finally, I believe that one can argue for a kind of "separation of levels" without necessarily arguing for autonomy in any of the senses discussed above. The question then becomes one of on the one hand exploring each aspect of language separately ("separation of levels", which I favor as part of my position in favor of maximal differentiation of variables, see again Garvin <u>forthcoming</u>), while on the other hand showing their interrelatedness (based on the basic belief in the "unity of linguistic structure").

C. <u>Role of context</u>. This issue arises from the attempt by linguists since the late fifties to develop context-free formal models of language, which seems to have given rise to the still current practice of arguing from isolated individual sentences presented out of context (since, I assume, context is viewed as part of "performance" rather than "competence") as either

"grammatical" or "ungrammatical". Context becomes relevant when the primacy (or exclusiveness) of the notion of grammaticality is questioned and "performance-related" notions such as "appropriateness" are introduced for which context is an essential criterion (appropriate in what context?).

In a sense, this issue is again an artifact of the theory given a theoretical position favoring context-free models and argumentation from individual out-of-context examples, context becomes a question of "performance" and as such only interferes with the search of what is considered to be "linguistically significant". Once this position is abandoned, the role of context becomes a nonissue: it is quite clear that language functions in a context and that context can be ignored only if a previously assumed theoretical position demands it.

D. Psychological reality of linguistic constructs. This is undoubtedly as much of a foundational issue as there can be, since after all the basic epistemological question is precisely the extent to which a given theoretical position offers a chance of leading to an understanding of something like the "psychological reality" of language which respect to both its structure and function. The issue then becomes one of the way in which one can gain access to this reality. The current trend is to look to psycholinguistic experimentation for this; my own view is that a systematic discovery procedure is required (see Garvin 1979).

The "dialectics" of American linguistics.

Looking at the major changes in the "mainstream" of American linguistics over the past few scholarly generations, one is tempted to view it in terms of the classical dialectic notion of the inter-penetration of opposites. Certainly, one can look upon neo-Bloomfieldian structuralism and the subsequent "Chomskyan revolution" as "thesis" and "antithesis": mechanism replaced by mentalism, empiricism replaced by rationalism, emphasis on discovery procedure replaced by rejection of discovery procedure (Cf. Garvin 1970). The question arises whether the current mainstream, which is certainly a powerful reaction against the "Chomskyan revolution" (see Givón 1979:1-3), qualifies as a genuine "synthesis" in the dialectic sense. In my view (which is only an impression, but could conceivably be backed up by a more convincing argumentation in the current style since there seems to be all sorts of evidence around in favor of my contention) -- in my view, it does not. The current mainstream position strikes me more like a "celebration of unsystematicity" than a new intellectual system -- it is not theoretically consistent enough, nor does it draw clearly enough upon its predecessors (if anything it seems to return for its roots to the 19th century) to constitute a real "synthesis". In a talk I gave some years ago in Prague, I coined the term of "diathesis", to be understood in its literal etymological sense implying a "disjoining" of the argument, to

characterize the current situation.

My major reasons for this rather severe opinion are the following:

1) The nature of the argumentation. Aside from the fact that, as I have already noted, I don't believe argumentation is an adequate substitute for a coherent discovery procedure as the principal methodological tool of linguistics, I also have some reservations against the way in which the argument is conducted. Most importantly, I am not happy with the current practice of adducing evidence from whatever source may yield material to bolster an argument (and conversely, material to bolster a corresponding counter-argument). Let me refer back to my discussion of issue #3, The relation of method to theory, for further details of this matter.

2) The definition of the phenomena under investigation. In this connection, I am particularly disturbed about the universalistic or typological conclusions drawn from phenomena considered to be the same without regard to the place they occupy in the very different linguistic structures from which they are drawn. As an example, let me refer back to the mention of the genitive in my earlier discussion of issue #3.

3) The quality of the data. Given the continuing relative neglect of problems of discovery procedure, the reliability of data (particularly of data from little researched languages) is not uniform, and randomly dependent on the intuitive gifts of whoever reports on these languages. Once again, I can refer back to my earlier discussion of issue #3 for further details on this matter.

4) Human nature as an explanatory principle. The problem here is that of the uncritical postulation of a universally uniform "human nature" applicable to all cultural communities equally. Clearly, this ignores the fundamental problem plaguing modern social science ever since anthropologists proposed the notion of cultural relativism: what is culture-specific and what is universally human (not to mention all possible points on the continuum between these two extremes). Clearly, none of this can simply be postulated, but must be carefully researched. Let me refer back to my discussion of issue #2, The aim of linguistics, for further details of this matter.

In summary, one can argue that with the extremes of Bloomfieldian behaviorism and its negation by generativism, American and American-influenced linguistics had worked itself into a blind alley and is currently engaged in a painful process of trying to back out of it gracefully (note that many proponents of the current mainstream acknowledge their transformational-

generativist training and their efforts to rid themselves of it). This backing-out process has led to a reaction, quite strong in some quarters, against theorizing in general, and has contributed to a lack of epistemological clarity which contrasts with the clearcut, though rather extreme and strongly confining epistemological positions characterizing the earlier schools of thought. In a sense one can say that this again is an extreme position, but unlike the earlier ones, this one is an antitheoretical and antiepistemological extreme.

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II

GENERAL LINGUISTICS

THE LANGUAGE OF IMAGINATION: A LINGUISTIC APPRAISAL OF LITERARY FANTASIES

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Imagination has been a central term in Western European thought.[1] It is ultimately derived from classical rhetoric, where the power of forming images in the mind was known as φαντασία, lat. visio. In epistemological theory, this power was understood as a kind of mediator between perception and thought, that is, between the outer reality of nature and the inner reality of the human mind. While to empiricist philosophers, such as Hobbes, the mind appeared as entirely passive, and imagination was nothing but "concept remaining, and by little and little decaying after the act of Sense" (Humane Nature, 1649, ch. III), in later times, philosophers and psychologists alike have been emphasizing its double function. According to Kant, the empirical or reproductive function of imagination enables us to perceive particular objects as such. It depends for its working on the association of ideas. The transcendental function, on the other hand, enables us to perceive things as objects of a certain kind, that is, it provides us with schemes or patterns by which we may generalize our experience (cf. Warnock 1976: 26-34).

These two functions are understood to be interactive. Our experience of the world is thus neither wholly passive nor simply a matter of abstract thought. Eventually, the imagination also enables us to form images which are neither wholly dependent on perception nor entirely intellectual constructs but which have no specifiable purpose outside themselves. This is what Kant, in his Critique of Judgment, has called the aesthetic function of imagination.

The psychological concept of 'fantasy', as defined by C.G. Jung, is likewise sited in an intermediate area between perceptions and predispositions of the human mind. Jung (1926: 273) describes it as a "peculiar activity of the psyche, which can be explained neither as a reflexive reaction to sense stimuli nor as an executive organ of eternal ideas." While the material of fantasy is derived from experience, the way it is employed is not.

Although there is a certain affinity between psychological fantasy and literary fantasies, there is more than just a gradual difference between them. Unlike dreaming, the inception and development of a literary fantasy is deliberative (Irwin 1976: 7). It is at least partly a rational activity. Furthermore, a product of the creative imagination is not necessarily fantastic in the same sense as a literary work may be called 'fantastic'. The term itself is essentially a 19th-century concept. It is known, that the word was

derived from E.T.A. Hoffmann's Phantasiestücke by his French translator Ampère (1828), who thought that 'fantaisie' had too pretty a sound to be applied to a collection of such uncanny tales. At the basis of 'the fantastic', there is what Fredericks (1978: 37) called a "counter-reality principle"; it is only understandable as a reaction against an accepted norm of what is supposed to be real.

The fantastic is thus 'derived' from reality in a very special sense. By a process of "defamiliarization" (Branham 1983: 66), it draws our attention to the restrictive nature of current epistemological norms. On the other hand, it is also supposed to provide insight into some aspect of general human experience of a religious, quasi-mythological, or psychological kind. We recognize a close similarity between fantastic beings or objects and entities from myth and legend, or psychological archetypes, which may be interpreted as conceptualizations of certain aspects of an intellectual experience which is not sensory in the first place. The process of defamiliarization is balanced by a process of recognition, and the fantastic appears as a result of these contrasting but interactive movements. It is thus an exemplary case of the creative imagination at work (or rather at play).

Viewed in terms of deviations from a normative system, the fantastic appears as a rhetorical phenomenon (cf. Pesch, forthcoming). Unlike grammar, which is concerned with what is right or wrong (recte), rhetoric is concerned with what is appropriate or not (apte). Rhetoric aims at a classification of deviations from conventions, which occur under certain conditions. The classical treatment by Quintilian in his Institutio Oratoria (1, 5, 38-45) distinguishes between four types of rhetorical operations: addition (adiectio), deletion (detractio), substitution (immutatio), and permutation (transmutatio). The application of these operations results in various figures of divergence or 'metabolies', as they have been termed by the 'groupe μ' (Dubois et al. 1970) at Liège. Supplementary to this 'rhetoric of divergence', a 'rhetoric of equivalence' has been suggested by other critics, which is supposed to deal with figures of repetition or reinforcement, also known as 'isotopies' (cf. Plett 1975, Ostheeren 1981). From a statistical point of view, however, both kinds of figures are to be regarded as deviations, although they deviate into different directions.

Both ancient and modern approaches to rhetoric have been mainly concerned with the domain of formulation, the classical elocutio. Rhetoric has thus been found particularly useful for the analysis of textual structures, from literary to commercial texts. Rhetorical operations, though, may equally well be applied within the domains of textual organization (dispositio) or thematic choice (inventio). Indeed it could be said that all fantastic beings or objects are derived by the application of one or more of these operations at the thematic level (Pesch, forthcoming).

Language, in literary fantasies, acts as a mediator between the world of the reader and its implied normative expectations and

the alternative world given in the text. The reader is generally presented with a representative, a human or humanlike character who travels through an exotic environment. While the representative is at times provided with heightened powers of perception, his expressive capabilities remain at the same level as the capabilities of the reader (Branham 1983: 68). Although the reader is thus increasingly left behind in terms of conceptual experience, he is still able to achieve rapport with the protagonist by their conceptual basis in common language. In a way, there is no other evidence for the fantastic environment presented in the narrative than the linguistic substance of the text. We may therefore suppose that the process of defamiliarization is to some extent reflected in the author's use of language.

This hypothesis is supported by the evidence. In particular, names or proper nouns assigned to nonrealistic concepts — beings, objects, etc. which cannot exist within the frame of our everyday conventional reality — may be interpreted as results of rhetorical operations. An exemplary case of addition is the mentioning of two new primary colors in David Lindsay's A Voyage to Arcturus (1920): jale is characterized as "dreamlike, feverish, and voluptous", ulfire as "wild and painful" (ch. 6).[2] The author takes recourse to synesthetic effects to give us an idea of the concept which itself is beyond description. Alternatively, new elements may be added to existing names, as in Cordwainer Smith's "The Ballad of Lost C'Mell" (1962), where people who have been bred from genetically altered animals — actually a case of thematic substitution — are earmarked with a letter added to their names: C for cat as in 'C'Mell', D for dog as in 'D'Joan'. Effects of deletion are achieved in a number of novels which are either themselves written in a language that has disposed of the first person singular pronoun, such as Ayn Rand's Anthem (1938), or make use of such a language as a fictional device, such as Samuel R. Delany's Babel-17 (1969). Also, uses of contractions in a hypothetical future slang serve to suggest a familiarity which does not exist on the reader's side, although the words are generally recognizable. Substitution may be simply a substitution of names, or of names by numbers, as in Yevgeny Zamiatin's We (1920), a precursor to Orwell's Nineteen Eighty-Four (1949). Substituting an invented word for an exotic object the function of which may be easily recognized has also been a common device in subliterary forms of fantasy, from Edgar Rice Burroughs' Martian novels to his contemporary successors. Permutation, eventually, occurs in the combination of disjoint elements, such as the imaginary sciences in Stanisław Lem's semi-fictional Summa Technologiae (1964).

While rhetoric as such does not apply to language only but to signs in general, its linguistic dimension has been brought into focus by Dubois and his group in pointing out that rhetorical operations may be applied at various linguistic levels. Dealing with works of literature, one may profitably distinguish between four levels of analysis: the phonological, the morphosyntactic, the pragmatic, and the graphemic. Substitution, for instance, which is possibly the basic fantastic operation — the Kafkan metamorphosis

of man into beetle —, may be seen to work at any of these levels. Phonological substitutions are common in pulp writing, as in the Conan stories by Robert E. Howard and his successors; they are used by authors to suggest certain cultural connotations without inventing a completely new name. Some phonological alteration is typical of hypothetical parallel worlds, from L. Sprague de Camp's "The Wheels of If" (1940), in which the Great Vowel Shift had never been completed (cf. Barnes 1975), to the parallel world mentioned in passing in Robert A. Heinlein's The Number of the Beast (1980), which is only distinguished from ours by replacement of the letter J by I (although it is not quite clear whether there is actually a phonological difference involved). A common morphological substitution occurs in Roger Zelazny's story "Auto-da-Fé" (1967), in which the bullfight of today has been replaced by a car-fight, and the bullfighter by a "mechador". Similarly, the repentant atomic physicist Leibowitz in Walter M. Miller's A Canticle for Leibowitz (1960), who had saved printed books from destruction after the nuclear holocaust, is referred to as a "booklegger" (cf. Barnes 1975). But even if the wording has not changed in a post-holocaust world, the usage often has. At the extreme point of the scale there are the scholars in Robert Graves' Watch the Northwind Rise (a.k.a. Seven Days in New Crete, 1949) who speak a reconstructed form of 'Classical English' including eye words such as scholarly abbreviations. Graphemic substitutions eventually may be as simple as in the Heinlein example mentioned above, or as the newspaper from the "Twenti-Furst Sentch'ri" [sic] discovered in a story by C.M. Kornbluth, "Time Bum" (1953), in which nothing but the spelling has changed (cf. Meyers 1980: 29), or they may go as far as in John Varley's "The Persistance of Vision" (1978), taking place in a deaf-and-blind community, in which a key concept is simply represented by a series of asterisks, ***, because it is communicated nonverbally, "three sharp slaps on the chest with the fingers spread", and incommunicable in verbal or written speech.

It is worth pointing out that deviations like these are not by definition fantastic. Shifts in perspective and concepts incommunicable except by metalinguistic circumscription may equally well occur in intercultural communication. The fantastic, as defined above, is necessarily an extraliterary and extralinguistic phenomenon based on the aforementioned epistemological norms. But since these norms and their linguistic analogues are also a cultural phenomenon, there is necessarily a close affinity between the epistemological shock caused by the fantastic and the cultural shock caused by intercultural clashes.

The examples listed above have been chosen rather at random, but even within the context of an individual work they rarely reflect any systematic preoccupation with language. As Meyers (1980: 12-37) points out in his survey on the future history of the English language, authors often seem to select just a prominent feature and modify it. Among the few works of fantasy primarily linguistic in inspiration, J.R.R. Tolkien's The Lord of the Rings (1954/55) is probably exceptional for his attempt at creating a

whole linguistic environment in the context of his imaginary world. Tolkien himself, a scholar and influential teacher in the history of the English language, who held two Oxford chairs in succession between 1925 and 1959, apparently believed that language, though conventional, was by no means arbitrary. In his essay "On Fairy-Stories" (1947), he talks about the "quality and aptitudes of a given language" (Tolkien 1966: 19). He is not concerned with language in the modern view, as a structure or as a means of human interaction, but rather, as Elizabeth Kirk puts it in her essay on Tolkien's linguistic aesthetic, with language as "the expression of — even, to some extent, the creator of — a network of consciousness that holds together an entire pattern of life" (Kirk 1971: 8). A name, within this linguistic-conceptual network, will select certain linguistic features which specify certain characteristics of a thing itself and of the way it relates to its context in terms of sound, derivation, morphology, usage, etc., reflecting on the underlying relationship in terms of probabilities and cultural expectations.

In his fiction, Tolkien makes these relationships easy to recognize by choosing a particular British lower middle class sociolect, a plain business-like style, as a norm against which all stylistic variations are to be measured. His pretense of translating from an imaginary source in an imaginary "Common Language" is thus not simply the old editorial fiction of the early novel. It is rather, as Ugolnik (1977: 23) aptly puts it, "the linguistic Rahmenerzählung of the trilogy, the frame which provides the linguistic connection between [Tolkien's] world and our own." Tolkien's English, then, is used as an analogue, supposed to reflect a similar pattern of life as his imaginary human mode of speech, but it is the actual basis he works from (cf. Tolkien 1981: 175).

We shall gloss over briefly the stylistic variations which take recourse to earlier modes of English Tolkien as a philologist was familiar with. They are nevertheless not exclusively to be seen as expressions of cultural values in their own right but reflect shifts in attitude, such as from the common to the heroic. And not until the end, when the formal language takes over in the narrative, does it become evident how insubstantial these secondary modes actually are. For our present concern, however, it is much more revealing to have a look at the invented languages of Tolkien's non-human peoples, and to speculate upon what modes of experience these languages may represent.

Phonological qualities. In the four major languages examples of which are given in the text — the Elvish tongue, given in two distinct variants, the older Quenya and the younger Sindarin, and the languages of Dwarves [sic], Ents, and Orcs — the phonological deviations from common English are the most obvious ones. Certain types of sounds occur more frequently than in English. In Elvish, these are phonemes with the feature [+sonant], namely vowels and certain fricatives, labials, and nasals, while stops and plosives are underrepresented. In the elder Quenya mode, only the 'dentals'

/n,l,r,s,t/ appear as final consonants (Tolkien 1981: 425). These features are virtually reversed in the "Black Speech" of the Orcs, where we have a preponderance of guttural and velar sounds, no fricatives except for sibilants, including /θ/, and hardly any nasals except for the bilabial closure /m/. The Dwarvish tongue is just as the Orcish characterized by closed syllables, although it displays a larger range of articulatory distinctions — the neutral /e/ missing in both cases — ranging from velar kh /χ/ to frontal th /θ/ (voiceless only) and b /b/, although frontal consonants are rare. The Entish, eventually, is given in a phonological approximate only which indicates open syllables, absence of stops, and a medium to low (central to back) vowel quality.

Morphological qualities. Of the Elvish language, some specimen of poetry exist which are glossed with philological meticulousness in a later appendix (Tolkien/Swann 1968: 58-67). From these we gather that the Elvish language is highly inflected by means of pre-, in- and suffixes. The Black Speech, on the other hand, seems to be exclusively right-branching, including post-positioned modifiers, while the Dwarvish, which is regularly inflected by suffixes, uses compounds both ways. The Entish is known, except for the phonological paraphrase mentioned earlier, only from Elvish translations, which indicate, though, that is is a polysynthetic language not distinguishing between word and sentence.

Pragmatic qualities. While the "Common Speech" is used for purposes of general communication, the other tongues are not necessarily so. The Elvish, in particular in its archaic mode, is primarily used in song and in moments of exceptional emotional stress. Frodo, lost in the land of the enemy, cries out in Elvish for relief although he "knew not what he had spoken" (LOTR II, Bk. 4, ch. 9). The Dwarvish is secretive rather than communicative. Durin, forefather of Dwarves, is described in a song how he awakens at the beginning of the world and takes it into possession by naming "the nameless hills and dells" (LOTR I, Bk. 2, ch. 4). The Dwarves are supposed to have their own secret names which they never reveal to beings of another race. Similarly, the Ents have some kind of true name — "Real names tell you the story of things they belong to in my language" (LOTR II, Bk. 3, ch. 4) — which is revealed only once trust is established. The Orcish, eventually, is almost dysfunctional. Instead of blessings, it is used for curses, and being almost unpronouncable due to its phonological qualities, it at times reverts into the pre-speech sounds of animals (cf. Ugolnik 1977: 28).

Graphemic qualities. The Elvish, though basically ritual, is a literate language, provided with a phonemic writing system. The Dwarvish writing is Runic, appropriate to its gnomic character. The Entish is purely oral, and the Orcish illiterate, borrowing foreign writing systems if necessary.

These various aspects may be displayed in the form of a diagram (Figure 1), in which the "Common Speech" — viz. English — occupies a central position.

	ELVISH frontal flexible ritual literate	
ENTISH open synthetic narrative oral	COMMON SPEECH	DWARVISH closed analytic predicative gnomic
	ORCISH back inflexible inarticulate illiterate	

Figure 1. The linguistic spectrum of Middle-earth

By polarizing these different aspects of language, Tolkien not only demonstrates the range of various linguistic parameters. He is, as noted above, primarily interested in language as a reflection of social and aesthetic virtues. The Elves, who call themselves quendi, those who speak, do not only show the language with the highest musical quality and the most complex structure, they also have the highest aesthetic capacities. The Dwarves do not only speak in closed syllables, they are a closed-mouthed, secretive race. Their language is not only constructed by regular inflections, they themselves have been made by the smith of the gods in the first age of the world. The Ents are not only given to long-winded speech, they are virtually vegetable creatures and grow like trees. The "Black Speech" of the Orcs is not only in many respects an inversion of Elvish, they themselves have been bred in mockery of Elves by the Dark Power. These relationships may again be displayed in a similar diagram (**Figure** 2), which may be superimposed on the linguistic one.

	ELVES light angelic spiritual created	
ENTS big vegetable organic grown	MEN	DWARVES small mineral technical made
	ORCS dark animal physical bred	

Figure 2. The ethnological spectrum of Middle-earth

At the basis of Tolkien's linguistic creation, there is an ethical system which is carried by the linguistic mode (cf. Shippey 1982: 92f.). Tolkien appears as that rare person, a linguistic moralist. "By playing [these languages] one against the other", Kirk writes, "he has created a 'model' (in the scientific sense of the term) for the relationship of language to action, to values and to civilization" (Kirk 1971: 10).

Only the 'Common Language' partakes of all relevant functions to a varying degree. Against it, the invented languages appear as necessarily simplified, a feature which is also typical of other imaginary languages, such as glossolalia, 'speaking in tongues'. In spite of this reductionist character, these artificial languages — if languages they may be called — deserve some interest as linguistic constructions in their own right; for by reducing the communicative function of language, they display other functions that are generally masked.

One of these functions has already been mentioned in passing, namely the sensual quality of words, which is much more prominent in the creation of names than in general language usage. Attention is paid to onomatopoëic qualities, to phenomena of distribution such as rhythm and alliteration, and to musical and synesthetic qualities. Tolkien, moreover, seemed to believe that there was an aesthetic quality to language structures as well (Tolkien 1981: 214), although he was ostensibly arguing from an ethnocentric point of view. Still, he contends that language is iconic to a higher degree than it is generally thought to be, namely, that not only the semantic repertoire of a given language but also its phonological and structural qualities reflect the conceptual experience of their speakers. This is what Shippey (1982: 87) calls Tolkien's "major linguistic heresy". At the basis of this contention there is possibly the old idea of a language "isomorphic with reality" (ibid.), the godly language that allows a true representation of the world. This concept has been used as a fictional device in Ursula K. Le Guin's A Wizard of Earthsea (1968), where indeed any thing may be called by its 'true name' in a 'true language' and where a magician by changing the true name of a thing may change the world itself.

This idea is literally true at the level of storytelling, although in applying it to the world we live in we would stand accused of not distinguishing between things as they are and things as they might or should have been. But, in a way, words employed out of their ordinary uses do create a reality of their own. The more we move away from the center of common speech, the more denotation is reduced in favor of connotation, and the more selectional restrictions which apply to our conventionalized system of communication tend to lose their cogency. This is what we may refer to as the metaphorical aspect of imagination (cf. Di Pietro 1978), the capacity of words to enter new combinations by ostensibly violating syntagmatic and paradigmatic constraints. If these combinations result in new insights and solutions, in new vistas of thought and feeling, they may indeed by a process of feedback change our per-

ception of reality. It is interesting to note that this metaphorical quality, just as the onomatopoëic one, has been associated with magic. To Tolkien, it is part of an intrinsic property of words:

> The mind that thought of light, heavy, grey, yellow, still, swift, also conceived of magic that would make heavy things light and able to fly, turn grey lead into yellow gold, and the still rock into a swift water. If it could do the one, it could do the other; it inevitably did both. (Tolkien 1966: 22)

Below the merely functional aspect of language, there is, apparently, a certain aesthetic quality to it, which comes to the surface in literary fantasies and which is linked with the creative aspect of imagination.

While within the imaginary world magic may actually work, we may suppose that it does not do so within our primary world. But the fact that the magic is couched in terms of the same symbolic system that also serves as a medium of narration provides a welcome connection between the world of fantasy and the world of the reader. To the reader, there is a certain poetic justice in the fact that those imaginary beings that are closest to creation are actually embodiments of linguistic metonymies, such as the dragon of legend, who, as Tolkien says, was born from man's desire to "put hot fire into the belly of the cold worm" (Tolkien 1966: 22).

NOTES

1. The initial and parts of the final section of this essay are based on the author's doctoral dissertation (Pesch 1982). They appear here in a different context and in substantially revised form.

2. To avoid a plethora of footnotes, quotations from fictional sources are cited by chapter only. In the case of J.R.R. Tolkien's The Lord of the Rings, the latest, revised edition has been used (1966; rpt. London: Allen & Unwin, 1970); references are given by volume, book, and chapter.

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TOWARDS A MORE FORMAL DEFINITION OF PIKE'S TAGMEME[1]

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0. Introduction. Although Kenneth Pike, the creator of the theory of tagmemics, has written much on this theory and has been its major proponent, he has not, it seems to me, provided a concise yet thorough definition of what the tagmeme is and how it functions in linguistic analysis. Most notably and most recently, he has published two volumes devoted to an explanation of the practical elaboration and application of the theory and an exposition of its theoretical bases. These two volumes, respectively, are Grammatical Analysis (co-authored by Evelyn G. Pike) and Linguistic Concepts: an Introduction to Tagmemics[2]. Certainly, both of these works do indeed give a definition of the tagmeme, namely, 'a constituent of a construction described in terms of four general features: slot, role, class, cohesion' (1977:490). However, it is difficult to understand completely this definition, and in particular the concept of constituency (in Pike's use of the term), without reading the entire book. In other words, then, Pike's own stated definition of the tagmeme, while it may be concise, is not thorough in the sense that it cannot be well understood except in the context of the full-blown, book-length treatment of the subject. Although Pike and Pike have formulated a list of principles (the numbered Principles occurring throughout each chapter) on which the application of the theory is based in the pedagogical text Grammatical Analysis, the list of these principles, too, is perhaps too long to be digested without in-depth study. What I propose to do in this paper therefore is to attempt to characterize the tagmeme more formally by investigation of Pike's conception of the grammatical hierarchy and his concept of constituency and the four tagmemic features of slot, role, class, and cohesion. The definition of the principles of tagmemic theory that I am proposing here thus will be a synthesis of Pike's own statements (some of them more formalized than others) and the observed principles that are implicit in his application of the theory.

1.0. Towards a Formalized Definition of the Tagmeme

1.1. The Grammatical Hierarchy. Pike's analysis of a given utterance involves its analysis on different levels of three hierarchies, which are the referential, the grammatical, and the phonological. A given utterance represents the simultaneous occurrence of these three interlocking hierarchies, the

boundaries of whose constituent units are not necessarily coincident[3]. By the phrase 'simultaneous . . . [but] not necessarily coincident' it is understood that in parallel linear analyses of an utterance, the boundaries between the units of one hierarchy do not necessarily correspond to those of another. Thus, for example, in an analysis of the French locution 'il a', we find that it is composed of two grammatical words, namely, "il" and "a", whereas it is at the same time composed of two non-corresponding phonological words, namely, /i/ and /la/: the unit boundaries do not coincide. Although it is important to keep in mind this comparative independence of each hierarchy relative to the two others[4], in this study we will concern ourselves only with the grammatical hierarchy since we are interested in the tagmeme and since Pike's conception of the tagmeme has its origin in the grammatical hierarchy[5].

The notion of linguistic analysis in terms of hierarchies, particularly in the domain of grammar, certainly is not at all novel or particular to Pike. What distinguishes Pike's conception of hierarchies from those of other linguists, however, is his treatment of the units at each level of the hierarchy. Many traditional ways of thinking about grammar, ranging from school-exercise 'sentence diagraming' to more sophisticated theories such as transformational-generative grammar, have conceptualized hierarchical grammatical structure in terms of tree diagrams (cf. Figure 1)[6]. Such tree diagrams--and such theories--have concentrated upon the combination of immediate constituents in sequence at each level into constructions. Pike says, 'Where emphasis is upon sequential or combinatorial relations, a grammar may be called COMBINATORIAL (or CONSTITUENT)' (1967:474). In many such analyses, the highest level of analysis has been that of the sentence, and frequently the lowest level has been that of the (grammatical) word or the morpheme.

By comparison, Pike defines a GRAMMATICAL HIERARCHY thus:

> When types of specific, dictionary (lexical) items or sequences of items serve as parts of larger units made up of such items, the relation of the included parts to types of including patterns (and, through the including whole, to each other) makes up a grammatical hierarchy. (Here the minimum dictionary entry is a morpheme, which may be part of the word; which leads, in turn, to successive potential inclusions in phrase, clause, sentence, paragraph, monolog, exchange, or conversation.) (1977:3-4)

With the exception of the consideration of higher levels of analysis than that of the sentence, it would seem at first glance that Pike's conception of grammatical hierarchy might be justly represented in a tree diagram such as Figure 1, expanded to include the higher levels of paragraph, monolog, exchange, and

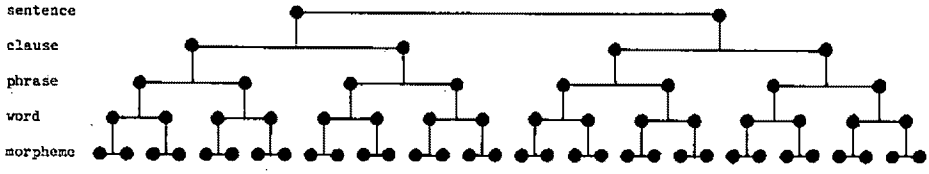

Figure 1.
Tree diagram for notation of traditional constituent analysis.

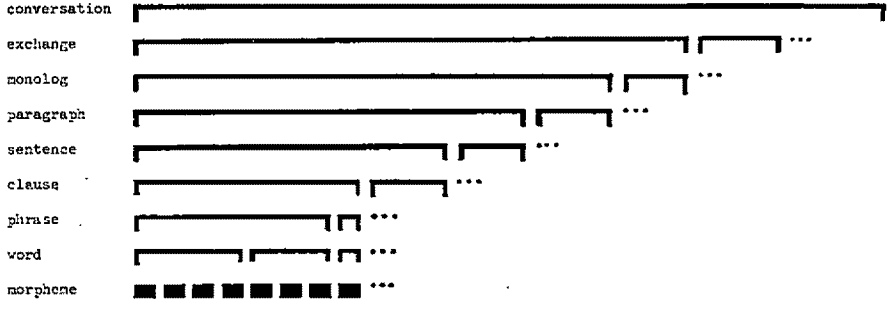

Figure 2.
Inclusion diagram for notation of tagmemic grammatical analysis.

conversation. (Indeed, Pike himself uses tree diagrams to represent his grammatical analyses, e.g., 1977: Display 1.1, following p. 13; Display 1.2, p. 14; Display 1.3, following p. 14; Display 1.5, p. 18; 1982: Figure 9.3, p. 78)[7]. It seems to me, however, that a diagram such as that represented in Figure 2 more accurately represents Pike's conception of successive levels of the hierarchy because each individual unit indicates inclusion[8].

Although Figures 1 and 2 may at first appear to be different representations of the same information structure, in fact they are not. Whereas Pike considers relations in a tree diagram, such as Figure 1, to be primarily lateral, in his own grammatical hierarchy the relations are primarily vertical, although not exclusively so (cf. 1967:476): 'units are . . . assumed to occur in higher-level slots and to be analytically identifiable in reference to the slots which they completely fill as units' (1967:478). Thus we may call Figure 2 a progressive inclusion (or perhaps more accurately, subsumption) diagram, because it has the function of showing how successively less elemental constituents are in turn subsumed into larger units. In other words, an inclusion diagram is designed to demonstrate that at each level there are units and that by going either up or down to the next level, one may observe how these units either subsume, or are subsumed by, other units. The difference, then, between traditional grammatical analyses and Pike's tagmemic approach does not lie so much in the nature of the immediate constituents themselves, since both approaches do recognize them, but rather in their respective treatments of the relations among them: traditional grammars have been preoccupied with the analysis of constituents at a given level into combinations, whereas Pike's approach places its greatest emphasis on the relations of constituent units as they fill slots in higher-level units.

The description of the inclusion diagram that I have just put forward corresponds quite closely in fact to Pike's definition of a grammatical hierarchy (cf. above) in that it accounts for the 'items or sequences of items' (i.e., linear order) serving as 'parts of larger units' (i.e., inclusion). The recursiveness of the subsumption of units corresponds to Pike's 'successive potential inclusions'. In short, the inclusion diagram seems to be an effective way to represent a hierarchy, as Pike uses the term: 'Hierarchy is seen when small units are found within larger ones, and these in turn in still larger units' (1977:3; underlining added).

Inasmuch as the units in question occur in defined linear orders (Pike defines the clause root, for example, as a 'string' [1977:482] and a phrase as 'a nonpropositional sequence of words' [1977-488]) and inasmuch as the units (except for morphemes) are internally complex (from the fact of their subsumption of their immediate constituents), Pike's grammatical hierarchy may be characterized, as to its information structure, as a list structure. Indeed, Pike says, 'From one viewpoint, the

grammatical hierarchy may be thought of as a list of units in levels' (1977:21; underlining added).

Pike sees the successive inclusion of units as a real functional necessity because of the 'psychological constraint upon complexity' (cf. 1982, section 9.1). However, successive inclusion is not merely a device for simplification to facilitate comprehension by clustering subunits into a smaller number of units that are thus easier to manipulate and process (cf. 1982:86); indeed, 'Each major type of level has some kind of function in behavior' (1982:72).

1.2. Constituency. Now, the reason for insisting upon this principle of inclusion to form units at each and every level (except, of course, at the lowest level) is that the unit in its own context (i.e., at its own particular level) forms the entire basis for Pike's tagmemic analysis: 'A unit-in-context may be observed at any level of any one of the hierarchies. They comprise part of the warp and woof of every grammatical, generalized linear pattern of verbal or nonverbal patterns of behavior' (1982:135). As Pike states further that 'no unit is findable or definable except in relation to context' (1977:4), he provides the device for defining these relations to context (i.e., to the context of a given unit's level in the hierarchy and to the next higher level of which it is an immediate constituent): the tagmeme.

Once it has been established that grammatical analysis will be concerned with the relation of units to their immediately subsumed or subsuming units at the neighboring levels, i.e., relationships of constituency, Pike can advance the definition of the tagmeme: 'A constituent of a construction described in terms of four general features: slot, role, class, cohesion' (1977:490).

1.3. Constructions. Pike defines a construction as 'any sequence of tagmemes which fills a single grammatical slot; usually applied to a (complex) grammatical unit . . .' (1977:482)[9]. A construction may be formalized in terms of a formula, which Pike defines as 'a representation of complex grammatical structure [i.e., a construction], illustrating in linear form generalized sequential patterns of optional and obligatory tagmemes . . .' (1977:484). Each construction is composed of a nucleus plus its margins[10]; the number of the latter may frequently be relatively large (cf., e.g., the large number of possible margins to a simple declarative sentence in English: 1977:36-37,230,256; and to the English count noun phrase: 1977:52-53). The nucleus is seen as obligatory to the construction and independent, whereas the margins are seen as optional and dependent.

A whole chapter in Pike (1977) is devoted to the elaboration of these tagmemic formulas, which are generative in that they allow for the generation (or representation) of a quasi-infinite number of texts that is bounded only by the number of lexical

items available for substitution[11] in the appropriate classes and by the constraints of the referential hierarchy.

We have already determined that the information structure of Pike's grammatical hierarchy is that of stratified lists. The list, by definition, is described in linear, or sequential, terms. Thus, at whatever tagmemic level one examines grammatical structure, it is seen to be made up of sequences of units-in-context, i.e., tagmemes.

1.4. Features of the Tagmeme. It is this characteristic linear order of the structure that defines the first of the four features of the tagmeme, that of slot. The slot may be thought of as a valent linear position which receives any member of the class which fits that slot. The class is the 'general set of items substitutable appropriately in the slot' (1982:75), or in other words, those items that are considered valent by the definition of the type of tagmeme in question. Within the defined class, the substitutions that may be made are limited only by the number of members of the class[12].

The feature of cohesion gives internal unity to the construction by relating certain tagmemes to others. Devices for grammatical cohesion in many languages typically include, but are not limited to, agreement markers for the person and number of subject and verb, the gender, number, definiteness, and/or animacy of modifiers and the modified, etc. Not every tagmeme shows cohesion, however; cohesion is thus an optional feature.

The fourth (Pike's third) feature of the tagmeme, that of (functional) role, does not fit into a purely structural conceptualization of the grammatical hierarchy. This feature is recognized by Pike himself as being somehow different from the other three since it does not deal with form (i.e., grammatical structure per se) but with function: '[there is] . . . a long-known difference between form and function in grammatical relations' (1982:76-77). For Pike function has to do with "pragmatic relevance and behavioral function' (1982:79). Since this functional component makes up part of the grammatical analysis, however, Pike is forced to define more than one kind of subject, for instance (cf. 1977:36-37).

2.0. Conclusion. We may conclude this study by recapitulating the major points that have been elucidated:

(1) Grammatical analysis (for Pike) is concerned with the first of the three simultaneous but non-coincident linguistic hierarchies: grammatical, phonological, and referential.
(2) Pike's conception of the grammatical hierarchy consists of successively subsuming units, called tagmemes, that define the concept of constituency.
(3) The units at each level of the hierarchy occur in linear sequence and thus define a list structure.
(4) Constructions are specifically defined sequences of nuclear (obligatory) and marginal (optional) tagmemes.

(5) Each tagmeme is characterized by the four features of slot (position in linear order), class (the set of grammatically possible substitution elements), role (pragmatic function in the construction), and cohesion (optional feature lending internal unity to the construction).

From these points, we may observe that Pike's grammatical hierarchy consists of elemental units (morphemes) successively subsumed into constructions at successively higher levels of analysis. The manner in which the subsumption takes place, i.e., the relation of units at a given level to the next higher level, is defined by tagmemes. Thus, tagmemes act both as elemental units within constructions and as unitary constructions that participate in higher levels of inclusion.

Notes

[1]I am indebted to Profs. Sydney M. Lamb and Philip W. Davis and to Daniel Mailman, Julie Maki, and Urszula Zaliwska-Okrutna, whose comments and suggestions during discussion of this topic at various stages of the present work contributed to my more precisely defining and clarifying the question at hand.

[2]Cf. the complete references for these two works in the bibliography below. Subsequent references in this article to the works of Pike cited in the bibliography will be by the year of publication only.

[3]For a discussion of the three hierarchies and their interlocking, see Pike 1967:474-476 and especially 1982:111-117.

[4]Pike says in 1967:475, 'we . . . deny any totally separate view of three hierarchies. We leave them only sufficiently independent to have identities of their own within the interlocking total fusing system'.

[5]Let us recall that Pike's original term was 'grameme'. In my opinion, tagmemic analysis is most effectively applied to the grammatical and phonological hierarchies. Its application to the referential hierarchy seems to me more contrived out of a strict parallelism of treatment of the three domains of linguistic stuff.

[6]The strict symmetry and regular successive bifurcation of the diagram in Figure 1 is not, of course, intended to imply that only two (no more nor no less) constituents may conjoin to form the structure at the next highest level; the diagram is presented for its general schematic value. The rectilinear form of the branching lines has no particular significance; similar diagrams with angular lines branching from each node to the nodes on lower levels have practically the same conceptual implications.

[7]Pike and Pike say in 1977:12, 'The parts of a story unit may be shown in an outline form as a hierarchical upside-down tree, with branches (representing the parts) coming from the nodes (representing the including constructions). The branches from a single node lead to the immediate constituents of the construction at that node. When branches enter a node from more than one direction, closing a loop, we call the resultant graph or part of a graph a network rather than a tree'.

[8]Although Pike utilizes in 1977:31-32 and 55-56 a very simple form of the sort of notation that I have used in Figure 2, he neither elaborates upon it nor exploits it to demonstrate the principle of successive inclusion of units.

[9]The term 'construction', in our observation of Pike's texts, seems to be used more or less interchangeably with the terms 'pattern' and 'structure' (e.g., 1977:15,16,133,138-139; 1982:80,135).

[10]The concept of nucleus vs. margin derives from Pike's concept of dynamic/wave perspective (cf. 1977:5; 1982:26-27).

[11]In this context, the term 'lexical items' is understood to mean the most elemental of constituents at the level concerned. On the substitution of lexical items, see the second following paragraph.

[12]This is to say that there are no grammatical constraints upon such substitutions, although the referential hierarchy imposes constraints as to which, of all possible texts, are admissible. Cf. also the second preceding paragraph.

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KRUSZEWSKI'S CONTRIBUTION TO GENERAL LINGUISTIC THEORY

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1.0 *Mikołaj Kruszewski (1851-1887): Life and Work*

1.1 *The historical background.* Largely because of Roman Jakobson's repeated appraisal of Mikołaj Kruszewski's contribution to linguistic science (e.g., Jakobson 1960, 1967), this Polish scholar's work has received renewed attention in recent years, in Eastern Europe as well as in western countries (e.g., Cherubim 1975; Kilbury 1976; Klausenburger 1978). However, Kruszewski's place in the annals of the discipline has been overshadowed by the vast output and the long life of his one-time mentor and collaborator Jan Baudouin de Courtenay (1845-1929), whose *oeuvre* has been the subject of many analyses during the past 20 years. In addition, we would have known little of Kruszewski and his linguistic ideas had it not been for Baudouin's efforts during the early 1880s to draw the attention of western scholars to his writings. Kruszewski for his part never had the opportunity to travel to any place west of Warsaw, and spent all his life as a linguist at the University of Kazan', the capital of the Tartar republic some 500 miles east of Moscow on the Volga. But Baudouin's attitude toward Kruszewski was not without ambiguity, and since we owe our knowledge of Kruszewski almost exclusively to Baudouin's (1888-89) report of the life and work of his former student, it has become difficult to assess Kruszewski's contribution fully and adequately. Indeed, Baudouin's account vacillates between disdain and envy: On the one hand, he alleges that Kruszewski learned everything he knew in linguistics from him, and that because of his limited knowledge combined with a strong bent toward theorizing, Kruszewski committed serious blunders of scholarship. On the other hand, Baudouin felt obliged on more than one occasion to concede that Kruszewski was the better theorist of the two.

In his life-time, Kruszewski received little recognition. Part of this was due to the fact that the bulk of his writings were in Russian. But even among Slavicists of the period, the reception of his ideas, probably because of the positivist pre-occupation with data and 'descriptive adequacy' in contradistinction to the deductive theory-orientation, was largely negative. Thus Vratislav Jagič (1838-1923), the great Slovenian scholar and editor of the "Archiv für slavische Philologie" (Berlin 1876-1929), reviewing Kruszewski's major study of 1883, criticized, among other things, his predilection for mathematical formulae and strange terminology. However, Jagič (1884:481) conceded that it might profit the discipline to reflect upon the state of the field and to consider new vistas. Kruszewski's compatriot, the young Slavicist at the University of Berlin, Aleksandr Brückner (1856-1939), criticized his Master's thesis on vocalic alternation in Old Slavic (Kruszewski

1881a) severely, pointing to errors in the analysis and chastizing Kruszewski for indulging in theory (Brückner 1881). Interestingly, both Jagič and Brückner take exception to Kruszewski's view that the *junggrammatische Richtung* marks a new phase in the development of linguistic science.

Kruszewski's work was not much better understood in the West. Karl Brugmann (1849-1919), whose "Nasalis sonans" paper Kruszewski had reviewed so favourably two years before (Kruszewski 1882), did not find anything useful in Kruszewski's *Ueber die Lautabwechslung* (Kruszewski 1881b). Brugmann (1882) did not even notice the significance of Kruszewski's distinction between 'Lautwandel' (sound change) and 'Lautwechsel' (sound alternation), regarding them as synonymous terms. Likewise, the distinguished French scholar Louis Havet (1849-1925), who had written a very insightful analysis of Saussure's *Mémoire* in 1879, criticized Kruszewski for treating language development as "un *devenir* rigoureusement continu", though he praised him for his analysis of the phonemes (!) of Russian (Havet 1881:279). Only Friedrich Techmer (1843-91), who was instrumental in publishing a German version of Kruszewski's *Očerk nauki of jazyke* of 1883 in his "Internationale Zeitschrift für Allgemeine Sprachwissenschaft" (Kruszewski 1884-90), reported more favourably on Kruszewski's *Ueber die Lautabwechslung* (Techmer 1887). In his attack on the Neogrammarians Schuchardt (1885:v, 5, 31) referred to the original Russian work of Kruszewski, and there are indications that the German translation had some impact on the work of Hermann Paul and Saussure. However, no review appeared of Kruszewski's *Prinzipien der Sprachentwickelung*, despite the similarity of the study's title with Paul's book of 1880, to which Kruszewski refered on numerous occasions.

1.2 *Kruszewski's career as a linguist.* As mentioned earlier, information on Kruszewski's life and work has come to us almost exclusively through Baudouin de Courtenay's (1888-89) biobibliographical account. On certain specific points, in particular Kruszewski's theory of vocalic alternation and the fate of his writings on the subject, additional information may be gleaned in a paper by the Russian Turkologist at the University of Kazan', Wilhelm Radloff (1837-1918), presented at the Fifth International Congress of Orientalists in Berlin (Radloff 1882:58ff.).

Kruszewski was born in 1851 in Luck, Volhynia, some 200 miles south-east of Warsaw. It was then part of the Ukraine, and today it belongs to the Soviet Union. He went to grammar school in Chelm, some 40 miles south-east of Lublin, still today a part of Poland. Having completed school with distinction, Kruszewski went to the University of Warsaw, where he studied philosophy and psychology. His Master's thesis on incantations in Russian folklore (Kruszewski 1875) signalled Kruszewski's penchant for psychological explanation, a trait which was to become characteristic of his subsequent work in linguistics too. Another feature of Kruszewski's writings was the influence that British empiricist philosophers had on his argument, an interest that the Russian philosopher at Warsaw, Matvej Mixailovič Troitskij (1835-99), had instilled in him. As a result, it is not surprising to find in Kruszewski's work references to philosophical writings in the tradition of Bacon, Locke and Hume,

in particular to those by Alexander Bain (1818-1903) and John Stuart Mill (1806-1873). But it was another of Kruszewski's professors at Warsaw, the Slavicist and folklorist Mitrofan Alekseevič Kolosov (1832-81), who, noting Kruszewski's interest in and gift for languages, suggested that he either pursue linguistic studies with Aleksandr Afanas'evič Potebnia (1985-91) in Kharkov or with Baudouin in Kazan'. As we know, Kruszewski decided in favour of the latter.

Following the completion of his studies at Warsaw in 1875, Kruszewski married and became a grammar school teacher for classical languages in Troick, a small city in the Orenburg (now Chkalov) province on the Ural river, some 200 miles south of Sverdlovsk. From there, he took up a correspondence with Baudouin, who, after having received his doctorate at St.Petersburg, had moved to Kazan' in September 1875 to teach comparative Indo-European philology. Within three years of regular correspondence with and tutoring from Baudouin Kruszewski had saved a sufficient sum of money and completed the necessary preparations to abandon his teaching job and to join his mentor. According to Baudouin's own testimony (BdC 1904:101), Kruszewski was an independent researcher within a year from his arrival in Kazan' in 1878. He first served as a lecturer and an assistant professor, and by the time of Baudouin's departure to the University of Dorpat (now Tartu in Estonia) in 1883, he had become an extra-ordinary professor for comparative grammar and Sanskrit. At the time of his promotion to the rank of titular professor in 1885 Kruszewski's health had declined to such an extent that he could no longer contribute to scholarly research. According to Baudouin's report (1904:104f.), Kruszewski had been of a weak physical constitution for a number of years, frequently victimized by bronchitis and pneumonia, to which from 1880 on signs of paranoia and mental exhaustion become more and more apparent. As a result, it is fair to say that Kruszewski had only five years to work out his linguistic ideas, a very short period indeed even for a most gifted student of language.

1.3 *Kruszewski's philosophy of science.* Given the few years Kruszewski had to work out his theories of language, his total output was comparatively sizeable, in particular if one recognizes the fairly large amount of data he investigated to support his theoretical assumptions. Subscribing to an empiricist position, Kruszewski followed the inductive rather than the deductive approach that most modern theoreticians would adopt. Characteristically, Kruszewski placed the following motto from Leibniz at the head of his 1883 Outline of Linguistic Science:

> Das Studium der Sprachen darf keineswegs von anderen Grundsätzen geleitet werden, als die Studien der Wissenschaft überhaupt. Warum mit dem Unbekannten statt mit dem Bekannten anfangen? Wir halten uns doch an die Vernunft, wenn wir mit dem Studium der neueren Sprachen anheben.

I believe that from this endorsement of Leibniz' position, we may deduce the following observations concerning Kruszewski's position: (1) The study of language is a science; indeed, for Kruszewski linguistics is a natural science, and the laws of language are comparable to those of biological laws (cf. Kruszewski 1885:262, n.2). (2) The investigator should follow the inductive approach;

thus he states in his *Über die Lautabwechslung* that in effect no fact in historical phonology (Kruszewski wrote: "alte Phonetik") is directly accessible to us, but must be ascertained inductively (Kruszewski 1881b:6). (3) As a result, the linguist should begin his investigation with the languages of today rather than with the study of the classical languages as was commonly done during the 19th century by historical-comparative linguists.

In emphasizing the empirical, inductive approach to language, and in fact by regarding linguistics as something comparable to a natural science, Kruszewski was in agreement with the conceptions of August Schleicher (1821-68), who played such an important role in 19th-century linguistics that even the Neogrammarians, who officially criticized his naturalistic views, continued to work within the framework he had established (cf. Koerner 1981, 1982). It is threfore not surprising that Kruszewski, who felt the strongest affinity with the Junggrammatiker (cf. Kruszewski 1884:299), should quote from Darwin on several occasions in support of his views of the nature of language (cf. Kruszewski 1885:262, n.2; 1887: 146, n.1; 150-51n.2, 167n.1). It would be easy from our modern standpoint to discard Kruszewski's naturalistic views; however, we should ask ourselves what conclusions he drew from these premises for the study of language rather than criticizing him for what we may regard as misguided.

Yet it should not be overlooked that Kruszewski's naturalistic views do not lead him to any form of crass materialism as some may find in Schleicher. His training in psychology and philosophy supplied him with additional tools. These were not contradictory because both disciplines had naturalistic ingredients and the strands of psychology and philosophy that Kruszewski subscribed to were strongly empirical in their basic assumptions, though they did not lead him to neglect the mental underpinnings of linguistic functions, as in the case of Schleicher. On the contrary, Kruszewski adopted a psychological phenomenology which included the use of Human notions of association of ideas as transmitted in 19th-century British philosophy, and he made use of philosophical procedures of induction, which meant that generalizations are arrived at on the basis of the close study of particular phenomena regarded as facts. In all this, Kruszewski regards himself largely in line of Hermann Paul's (1846-1921) views as expressed in his Prinzipien der Sprachgeschichte of 1880, to which Kruszewski refers quite frequently in his own major study. Kruszewski (1884:300) regards their works as differing in emphasis and basically complementary.

2.0 *Kruszewski's Major Contributions to Linguistic Theory*

Having referred to Kruszewski's philosophy of science in the previous section, we may now inspect the theoretical conclusions he drew from his general views for the study of language. As noted earlier, these general views were shared by most scholars of his generation. However, not many of them had a comparable formal training in psychology and logic, something which accounts for some notable differences and, on some occasions, innovations on his part. We know from Baudouin de Courtenay's reports (e.g., BdC 1895) that from early on both Kruszewski and he engaged in frequent theoretical discussions and in the coinage of numerous new linguistic terms.

Only some of them survived the fermentive period 1878-83 of the Kazan' linguistic circle, which also included the Turkologist Wilhelm Radloff (alias Vasilij Vasil'evič Radlov, 1837-1918), the general linguist Sergej Konstantinovič Bulič (1859-1921), and several others. It appears, however, that in these activities Kruszewski was the prime mover; Bauduoin admitted on several occasions that Kruszewski was particularly prolific in matters of linguistic theory largely because of his better grounding in philosophy.

2.1 *Definitions of the object of linguistics.* In the theoretical portion of his 1881 Master's thesis, which he also published in a German version (Kruszewski 1881b), Kruszewski makes the following statement as the outset of his argument (p.3):

> Nobody will deny that those phenomena whose totality is called language, have to be the object of linguistics, and that the ultimate goal of this science must consist in the discovery of laws which govern those phenomena. (Kruszewski 1881b:3; emphasis in the original)

The rigor of this assertion must have stunned linguists of the time, and it is not surprising that several German publishers rejected the manuscript as having so little to do with the science of language as they understood it.

Kruszewski continued his argument by criticizing the traditional goals of linguistic science for being exclusively concerned with matters of genetic relationship and the reconstruction of proto-languages. He added: "It is quite unnecessary to prove that all these subjects cannot be recognized as science" (p.3). In fact, the discovery of the laws of linguistic phenomena ought, according to Kruszewski, to take pride of place; the traditional concern with linguistic genealogy and reconstruction should be only one province of the field, and a lesser one at that. He goes on to indict contemporary linguistics for its obvious neglect of modern languages. In particular, he holds that the spoken languages of today should be the prime object of linguistic investigation, something which Osthoff and Brugmann demanded in their 1878 manifesto only to sweep it under the rug in their subsequent research. The reason for Kruszewski's requirement is clear: "Im Vergangenen, im Leblosen ist es entweder sehr schwer oder völlig unmöglich die Gesetze der Erscheinungen zu entdecken" (1881b:4). Kruszewski goes on to introduce his own generalizations, first about morphological change (4-5) and then in much more detail on phonetic explanations of language evolution (5-26), and various other matters such as semantic differentiation of doublets, analogical formation, and a discussion of the sound-law hypothesis advanced by the Neogrammarians.

Since Kruszewski's contribution to phonology and morphophonology has been discussed in detail by several scholars in recent years (e.g., Kilbury 1974:250-52; 1976:17-23; Klausenburger 1978; 1979:12-22), I shall forgo this area, in which Kruszewski made a number of interesting proposals, in order to focus on his general linguistic theory, including his syntagmatics and syntax, which is usually ignored in the literature. Following his investigations of what he believed to be the natural processes of language evolution

on the levels of phonology and morphology, Kruszewski aimed at higher levels of linguistic discovery. Thus he reported on his ongoing research for a more general outline of linguistics to Baudouin (who was touring Western Europe while on sabbatical leave at the time) in a letter dated 3 May 1882:

> Something like this will be the subject of my work; the general argument will be as follows: 1) Next to the actual [i.e., already established] science of language another more general [science], something like a phenomenology of language, is necessary. 2) A certain foreboding of such a science can be asserted in part from a few writings by the Neogrammarians. Their principles however are still either unfit to build a science of this kind on or are insufficient. 3) It is possible to find in language itself solid elements for such a science. (Baudouin de Courtenay 1904:134-35, translated into English)

These theses represent in nuce what Kruszewski was attempting to do in his dissertation of 1883. It is evident from his frequent references to their works that Kruszewski was having Berthold Delbrück's (1842-1927) Einleitung in das Sprachstudium and Paul's Prinzipien, both first published in 1880, in mind when he hinted that some of the writings by the Neogrammarians contained certain elements of what he was working on. It is perhaps no accident that the German translation of Kruszewski's Outline of Linguistic Science had a title similar to Paul's book: Prinzipien der Sprachentwickelung, although in both works much emphasis is placed on synchronic rather than diachronic considerations of language study. It is true, however, that both authors are mainly concerned with the discovery of the mechanisms of language change, as this was regarded as the central task of 19th century linguistics.

Unlike Paul, who did not realize that he was in fact arguing in favour of a descriptive linguistics alongside with an historical linguistics, Kruszewski was much aware of what he was doing. He clearly distinguishes between what he terms 'static' and 'dynamic' phenomena in language as in nature in general (Kruszewski 1885:262), and places much stress on what he terms 'static laws' in language. Language is conceived as an harmonic whole, in which each category is related to any other category by differing means. The homogeneity and the harmony of the elements within a system of language is for him a basic 'static law' (p.263). Thus, when dealing with the sounds of language and the laws he believes to underly their behaviour (Kruszewki 1884:301f.; 1885:260-68), Kruszewski wrote that each individual sound of a given dialect spoken at a given time must be almost identical among all the speakers of that community. He explains that he qualifies the identity of sounds as 'approximative' (ungefähr) because he believes, with Darwin (Kruszewski 1885:262, n.2), that language underlies biological, not chemical or physical laws, in that language change is possible only because of the existence of variation. These variations have no importance in the normal functioning of language however, he insists (p.261, n.4).

Central to Kruszewski's argument is the concept of language as a system, but not simply as a system but more like something that

Josef Vachek calls 'a system of systems'. The term 'system' runs through his entire Outline (cf. Koerner 1973:164, n.34, for a list of locations) like a read thread. In accordance with the capacity of the human mind to classify and to generalize phenomena of reality into certain systems or types of notions, Kruszewski distinguishes three subsystems in language, namely, the phonetic, semantic, and morphological, which in his view are interrelated and correlated to the processes of 'typification'. He identified three types of systems, unordered, partly ordered, and entirely ordered. 'Unordered' are features of language that are either remants of earlier systems or those items that are largely dissociated in our mind. Kruszewski appears to be thinking of what we frequently refer to as function words, which form a list ('Reihe'), but not a system (cf. Kruszewski 1885:306). Declination and conjugation are particularly well developed systems (1884:6); morphology offers a variety of systems (1890:340) and at times only fragments ('Splitter von Systemen', p.357-58).

2.2 *Levels analysis avant la lettre.* Despite the lengthy discussion of phonetic-phonological detail, Kruszewski by no means neglects other levels of language. Indeed the unit of 'word' plays an important role in his theoretical discussion; he regards it at one point as representing the 'sound complex' par excellence (Kruszewski 1885: 263). From a purely phonetic point of view, the word has no particular use; it is merely "a symbol, a substitute for an idea, and a member of a symbolic series, like the sound, (and) it does not appear in isolation" (ibid.). In other words, it is the co-occurrence with other words which defines this unit. Without explaining what he meant by 'symbol', Kruszewski goes on to state (pp.263-64):

> Dieses Paaren der Idee mit dem Lautkomplex ist nichts absolut notwendiges, primäres: in der Sprache der Taubstummen verbindet sich dieselbe Idee mit der Gebärde (Gestus), in der chinesischen Sprache mit dem schriftlichen Zeichen, endlich verbindet sich in verschiedenen Sprachen ein und dieselbe Idee mit verschiedenen Lautkomplexen.

Here, I believe, we have in a nutshell a very similar argument concerning the arbitrary nature of the linguistic sign that we find developed more fully in Saussure's lectures. The word as a language sign results from the combination of a representational, semantic part, which Kruszewski calls 'symbol', with a carrier. The vocal realization is secondary; there are other means to communicate the message: Kruszewski refers to the sign language of the dumb and deaf and to the Chinese characters which bear no reference to the phonetic shape of the sign or word communicated. The word - and hence the linguistic sign in general - owes, in Kruszewski's opinion, its existence exclusively to the combination of the two parts. When he speaks of the 'laws of association' (Kruszewski 1885:264), he is introducing a concept derived from British philosophy which he turns into an important tool of his linguistic argument.

Referring to John Stuart Mill's System of Logic (1843) for support of his claim, Kruszewski put forward the following proposition:

> Wir sind überzeugt, da die Aneignung und der Gebrauch der

> Sprache unmöglich wären, wenn sie eine Menge von vereinzelten Wörten darstellte. Die Wörter sind mit einander verbunden: 1. vermittelst der Ähnlichkeitsassociationen und 2. vermittelst der Angrenzungsassociationen. Daher entstehen Familien oder Systeme und Reihen von Wörtern. (1884:304)

Kruszewski adds that words marginally associated or not at all are easily forgotten. Although there may be still other means by which we may remember words, these two principles of connecting words are fundamental; in fact, in this regard linguistics and psychology are on the same footing. The word exists only in the human mind, and the mind is governed by these principles (Kruszewski 1887:174).

Further on in his study, Kruszewski expands on his views regarding the interrelationships of words in language as follows:

> *Wenn die Wörter nach dem Gesetz der Ähnlichkeitsassociation Systeme oder Familien in unserem Geiste bilden, so ordnen sie sich nach dem Gesetze der Angrenzungsassociation in Reihen.* Jedes Wort ist also mit zweierlei Art von Banden verknüpft: es ist nämlich 1. mit unzähligen Banden der Ähnlichkeit mit Wörtern verbunden, welche den Lauten, der Struktur und der Bedeutung nach mit ihm verwandt sind, und 2. mit ebenso unzähligen Banden der Angrenzung mit seinen verschiedenen Begleitern in verschiedenen Redeweisen (Kruszewski 1887:172; emphasis in the original).

These two types of associations or connections are quite different in kind of course; this is also clear from Kruszewski's quotation from Mill's Logic (1884:304, n.1), where Mill speaks of the laws of similarity and of simultaneity or immediate succession. In other words, in the first instance, connections are made because of similarity in sound, morphological structure and meaning, whereas in the second type we have to do with actual occurrences in the speech chain. If we remember that Saussure spoke of 'associative relationships' in language (instead of 'paradigmatic relations', as Hjelmslev would have it), we may realize that we have here in Kruszewski's proposals the immediate source for Saussure's syntagmatic/associative dichotomy of relationships in language. Moreover, we may wonder whether J.R. Firth, who gave a succinct analysis of Kruszewski's theory of vocalic alternation or ablaut in 1934, did not derive his idea of 'collocation' from reading Kruszewski's other work in German. Thus, Kruszewski explains (1887:172) that we get used to employing a certain word more often with one particular word than with another, arguing that by repeated association of contiguity, i.e., frequent use in certain combinations, it would be possible for the common man (who does not know Latin, for instance) to recall a foreign word, for example, which bears no resemblance to any other word in his language.

Kruszewski believes that the speaker may also connect subconsciously certain words with others by something he calls analogy, here used in a much more general sense - and folk etymology. But the major ties connecting words in a language are those of coexistence (Koexistenz), due the workings of associations of similarity, and those of consequence (Konsequenz), due to their occurrence in a linear fashion (Kruszewski 1887:173; cf. also 1887:156, 159).

As regards associations of similarity, Kruszewski (1887:171) emphasizes that these connections are not only external (äusserliche) ones, phonetic or morphological, but also internal (innere), semantic ones. For example, if we want to recall the word vedet "he goes/ guides"), this procedure is facilitated by virtue of the existence of other forms in the language, such as vedeš, vedu, vedenie, etc., which do belong to the same word family. There is also, Kruszewski adds, another, though less close, connection between vedet and idet "he goes", neset "he conducts", etc., due to the fact that they all share the third person singular marker -et. Finally, there are still lesser connections on grammatical or morphological grounds between vedet and govorit "he speaks" or stoit "he stands". (The similarity between these examples and those in the Cours is obvious; cf. Koerner 1973:156-57 for details with respect to the well-known enseignement example.)

2.3 *Toward a syntagmatics.* We would call, with Saussure, the associative relationships as relations 'in absentia'; this means they are connections we are making in our minds. One item is chosen by the speaker in a given moment as against any other form that might have fitted the slot in the suite linéaire. By contrast, the relations obtained following the 'law of contiguity' are 'in praesentia', at least in many instances. They are not simply associated in our mind but concern units, 'words' in Kruszewski's presentation, that co-occur in a speech chain, and they so appear habitually or at least quite frequently in those particular contexts. In other words, the connections made in our minds must be quite different in nature; they do not concern selections of one form over and above another, but collocations of one form in conjunction with others. For instance, if we have an expression meaning "wear out", our mind will quickly call forth expressions such as those referring to "garment", "dress", "trousers", etc. in one semantic field, and "bearings", "discs", and others in another context. These are semantic and grammatical or lexical and categorical aspects combined. If we move beyond the phrase, we may emphasize more clearly the formal side of the connections, although our Sprachgefühl will tell us quickly that our judgement is again largely based on semantic or, rather, lexical considerations. Nevertheless, the formal aspect appears to be the more conspicuous feature.

Kruszewski hardly ever ventured beyond the word and the phrase in his Outline; this is quite typical of late 19th-century positivism which is still much in evidence in Saussure's Cours where little can be found that concerns syntax. However, Kruszewski (1887:171) supplies the following example from German in conjunction with his discussion of the association of contiguity (Angrenzungsassociation) which produces series (Reihen): er ... das Pferd am Zügel die Straße entlang "he ... the horse by the bridle along the street", where our mind quickly supplies us with the missing führt "leads". Kruszewski does not elaborate on his example; indeed, he refers to it as an assembly of words, though he also refers (p.172) to "syntaktische Reihen von Wörtern". But again, as the characterization makes clear, he is not drawing particular conclusions for a syntax or at least a theory of a syntagmatics from this observation. The centre of attention remains the word, or word morphology for that

matter (cf. Kruszewski 1887:171-87, 1890:339-60 passim).

3.0 *Concluding Remarks*

As stated earlier, Kruszewski did not live long enough to work out his theory of language; he was twenty-five when he established his first contacts with Baudouin de Courtenay, twenty-seven when he joined him at the University of Kazan', and thirty-three when he was struck by mortal illness in 1884. The year before, after Kruszewski had completed Očerk nauki o jazyke as his doctoral dissertation, Baudouin left Kazan' for the University of Dorpat, and thus evidently deprived him of the main source of stimulation and exchange of ideas necessary to develop his theories further. Happily, owing to interventions made by Baudouin and the interest Friedrich Techmer took in Kruszewski's work, the Očerk was translated into German — apparently by Kruszewski himself (cf. 1884:295, note), but with help from Techmer, Baudouin and another young student of Baudouin's at Dorpat, Aleksandr Ivanovič Aleksandrov (cf. Kruszewski 1887:187, note). In this way, due to the appearance of "Prinzipien der Sprachentwickelung" in Techmer's Zeitschrift (1884-87, 1890), Kruszewski's ideas became eventually known in the West, though they probably did not receive the attention they deserve. The reason was that the majority of linguists of the time were not interested in general linguistic theory or in any abstraction and generalisation derived from observed facts. Thus we find that only theory-oriented scholars such as Hermann Paul and Ferdinand de Saussure took note of Kruszewski's work.

3.1 *Some examples of Kruszewski's theoretical innovations.* Still today, the attentive reader of Kruszewski's writings will derive stimulation from the many theoretical observations made in both his Lautabwechslung und his Prinzipien. In his 1881 essay, we have the first clear-cut distinction, already implicit in Saussure's Mémoire, which Kruszewski had reviewed in the preceding year (Kruszewski 1880a), between sound (Russ. svuk) and phoneme (Russ. fonema). Thus, at the same time he distinguished between the levels of phonetics - called by Kruszewski and Baudouin de Courtenay 'Anthropophonik' with reference to the work of the physiologist Carl Ludwig Merkel (1857) - and what we now call phonology (which Baudouin called 'Psychophonetik' in 1895).

Although Kruszewski did not put forward a comprehensive argument in favour of the necessary division between the synchronic and diachronic viewpoints, many important observations to this effect can be found throughout his writings. In his Ueber die Lautabwechslung of 1881, the distinction between vocalic alternation - a synchronic phenomenon (irrespective of his historical sources) - and sound change (Lautwandel) is advanced (cf. also Kruszewski 1884:302f., where he distinguishes between 'Lautumwandlung' and 'Lautsystem'; 1885:259, 1887:149, 164, 176, and elsewhere). More importantly, Kruszewski (1884:299) refers to Baudouin's study of analogy of 1868 as leaving the historical viewpoint and concentrating on the present language (jetzige Sprache), suggesting in fact the diachronic/synchronic axis by distinguishing between two perspectives under which language phenomena can be studied: in horizontal and vertical directions (Kruszewski 1887:145). Indeed, concepts such as distinct periods of language (Sprachepoche), uniformity of language states

(Einförmigkeit des Zustandes, p. 152), and the distinction between 'static laws' and 'dynamic laws' in language (cf. Kruszewski 1885: 262, 263, 267; 1887:149, 152, etc.) indicate quite clearly that Kruszewski made a theoretical distinction between the diachronic and the synchronic viewpoints. (Cf. also the use of 'Zustand' in Kruszewski 1890:134, 136.)

There are other suggestions to be found in Kruszewski's Prinzipien which were taken up only much later. With reference to the 'law of contiguity' (Kruszewski 1884:301; 1885:264), for instance, Kruszewski noted that there is a special relationship between word structure and word frequency. Thus, even though forms such as aller, je vais, and j'irai in French are quite different morphologically, their frequent use in every-day discourse helps us to recall them quickly whenever required. It appears that he was close to formulating that principle advanced by Jerzy Kuryłowicz (1895-1978) in 1949, namely that of the inverse ratio between word use and its content: "plus le contenu est général, plus large est l'emploi du signe dans la communauté parlante, plus le contenu est spécial, plus l'emploi ... est étroit" (Kuryłowicz 1960:14).

In a 1953 paper, W.S. Allen noted that observations made by Kruszewski concerning the stability of conditions for linguistic change (cf. Kruszewski 1881b:11, 31) are in fact paralleled by arguments found in the writings of modern authors such as Henry Max Hoenigswald and Charles Ernest Bazell (cf. Allen 1953:60, n.3). No doubt, a fair number of other insights of a theoretical nature can be found in Kruszewski's work.

3.2 *'System' and 'structure' in Kruszewski.* Although Saussure avoided the use of 'structure' in his lectures - the index of the Cours as published by Bally and Sechehaye does not even mention the term (cf. however Saussure 1931:180, 244, 256), structuralism in modern linguistics is generally associated with Saussure's posthumous work. The key term in Saussure's writings as without doubt 'system', as already announced in his Mémoire of 1878. In Kruszewski's work, this term is probably as frequently used as in Saussure's lectures, although much less in an abstract sense. In fact, Kruszewski speaks of systems (Systeme) as well as system (singular) in his Prinzipien, applying the term to phonology, morphology, lexis and language in general.

In the sections devoted to sounds, sound complexes, and sound change, we find Kruszewski frequently referring to 'Lautsystem' (1884:301, 302, 303; 1885:262, 267; 1887:157, 160). Indeed, he conceives of language as a harmonic system (harmonisches System), with reference to the phonology of a language (1884:303) as well as language in general (p.395). Language change produces a derangement (Störung) of this system (ibid.); the harmony of the system being of course nothing permanent. However, from a non-historical point of view, this is an essential characteristic of the sound system: "... als statisches Gesetz des Lautsystems müssen wir seine Gleichartigkeit und Harmonie betrachten" (Kruszewski 1885:263; italics for bold type in the original).

Later, dealing with morphology and the word as basic unit of language, Kruszewski assumes that a harmonic system prevails there as well, though again this harmony may be subject to destruction

(1890:134) or at least derangement (p.137). He recognizes the presence of various systems in language rather than one system, and he distinguishes between three kinds: unstructured (nicht uniformierte), partly structured, and completely structured. Kruszewski is referring in particular to declension and conjugation systems in language (1890:341-42), but he also speaks of word system (Wortsystem; 1890: 134, 140, 339), form system (Formsystem, p.139), systems of language (Sprachsysteme, p.357), and the like. In fact, he speaks on one occasion (p.345) of systems of patterns (Systeme von Mustern) in language, and on another of language as a system of signs (System von Zeichen, 1887:174). A closer analysis of Kruszewski's Prinzipien would reveal additional usages of the term 'system', but it is clear from the above citations that the concept is central to Kruszewski's argument.

The term 'structure' too can be found in Kruszewski's writings; indeed, this concept (and lexical item) had been frequently used by linguists such as Friedrich Schlegel, Bopp, Humboldt, and many others in the early decades of the 19th century already and is by no means something peculiar to Kruszewski. In his Prinzipien, 'Struktur' appears especially in conjunction with word morphology. First of all, structure is used to refer to means of formal organization (1884:306), and in contradistinction to meaning (Bedeutung; 1887: 177). According to Kruszewski, declensions and conjugations may form systems if viewed from a point of view of structure (1884:306), and he uses the compound 'Struktursysteme' in this context. The terms 'Gestalt' (1890:143) and 'Bau' (p.345) can also be found, but it cannot be claimed that Kruszewski uses the concept of 'structure' as a particularly fundamental one in his overall theory of language.

3.3 *Résumé*. Investigating the various 'synchronic' and general theoretical statements in Kruszewski's oeuvre means — as is even true of Saussure's Cours — to lose sight of what was the major occupation of 19th and early 20th century linguists: the study of language development, its principles and its causes. Kruszewski, like Paul before him and, if we are to ignore Saussure's early work, Saussure after him, recognized albeit more tacitly than overtly acknowledged, that the evolution of language cannot be studied without the establishment of language states. But it appears to me that Kruszewski remained closer to Paul in that he did not explicitly state that the study of language on the synchronic level could be a scientific engagement by itself; the discovery of 'laws', in particular 'dynamic laws' that would reveal the mechanisms of linguistic change remained to a large extent the ultimate goal of linguistic research even in Kruszewski's program. This may not be a shortcoming. Contrary to what the 'vulgata' text of the Cours suggests, Saussure did not plan to divorce synchrony from diachrony to the extent that these become two separate compartments of language study as we find it practiced in Bloomfield's Language of 1933 and the work of his followers down to the present day, Chomsky included. We may therefore agree with Joseph Greenberg's observation of 1979, one hundred years after Kruszewski's first publication in linguistics:

> It is probable that any generative theory is deeper than any structuralist theory. However, the deepest of all was prob-

ably that of Kruszewski and Baudouin de Courtenay — often considered early forerunners of structuralism, since they included a frankly comparative-historical component. (Greenberg 1979:287)

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GUSTAVE GUILLAUME — A PRIMER*

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One of the most striking characteristics of Gustave Guillaume as a linguist was his single-mindedness. In the earliest of his writings (1911) he was already concerned with "the mind directing the act of language", and his lecture of January 28, 1960, written barely a week before his death, depicts language as "a mechanism commuting what has been thought into something said". Between these two texts stretches nearly half a century of observation and reflection in an effort to understand better the relation between thought and speech, between mind and language.

Even though it is an oversimplification, one might characterize the main object of Guillaume's research during the first decade of his career as a linguist by means of a single question: where do the various contextual senses of a morpheme come from? As a young man, Guillaume had taught French to Russian émigrés, and, like many second language teachers, was no doubt confronted with the problem of reducing the polysemy of grammatical forms to a basic meaning. In this attempt to get to a deeper level in language, he soon saw that the relation between the "underlying" meaning and the diverse contextual senses must be one of *potential* to *actual*, an insight that led to a detailed study of the article in French, published in 1919 and dedicated to Antoine Meillet. In later years, the author himself remarked that this volume contributed an idea "overwhelming in its banality: underlying an actuality there is a potentiality." With hindsight, this idea may well appear so obvious as to be banal. It remains, however, that some linguist had to adopt it as a starting point for reflecting on language, and, by the same token, as a basis for the science of linguistics. Guillaume was to spend the rest of his life exploring language in the light of this potential/actual relationship.

The second decade of Guillaume's career was largely concerned with the problem posed by the answer to his first question: if the various contextual senses of a morpheme arise as actualized meanings from a single potential meaning, where does the potential meaning itself come from? In his attempt to get to a deeper level of language, he sought, as always, to determine the conditions presupposed by that facet of language he was trying to understand. It was not until 1927 that Guillaume had the insight that provided the cornerstone for all his later theorizing: he saw that something is potential *before* it is actual.

A use of the French subjunctive which opposed it to the indi-

cative had led him to reflect on how we think the possible and the real. He saw that to represent some event as possible, by means of the subjunctive mood, the speaker must somehow give it precedence, must somehow think it prior to thinking it real by means of the indicative mood. And the only time within which he could postulate that the subjunctive precedes the indicative was the "thinking time" required by the mental process of representing an event. This insight led him to imagine the system of mood as essentially a single, subconscious operation of thought which can be held up at successive moments, each such interception giving rise to the formal (grammatical) meaning that characterizes one of the moods of the French verb. Within two years, Guillaume had published his second major study, *Temps et Verbe*.

This second landmark is certainly significant for the systems of aspect, mood and tense proposed, but its basic importance lies in the principle of analysis underlying them: *operative time*. For Guillaume, a grammatical system is essentially a mechanism in the mind which produces the several meaningful constituents of the system. That is, each of the morphemes belonging to the system arises at a different moment in this operation of thought as a potential meaning determined by its relative position in the operation involved. As a consequence, each morpheme must be defined in terms of its position, early or late, in the micro-stretch of time required for this mental process to unroll. It is this "thinking" or operative time of a system ("It takes time to think, as it takes time to walk," as Guillaume used to say) which provides a necessary parameter for any language system, permitting the linguist to determine the "notional chronology" of the morphemes involved and to see the respective potential meaning of each one as the consequence of its position — initial, medial or final — within the system.

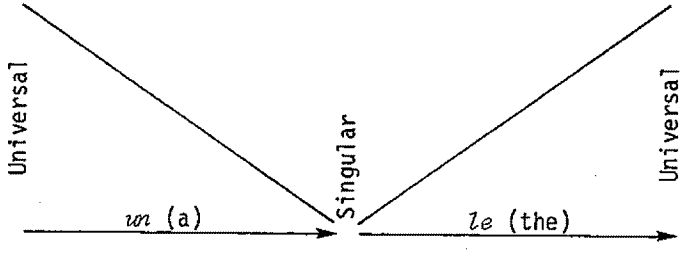
This is why, from 1929 on, one might characterize Guillaume's scientific work by the motto "think operatively". For him, "everything in language is process," and one could not be said to understand any language entity, be it the most particular use of a morpheme or the most general of systems, until one had a view of the process that had produced it. The habit of thinking operatively was so deeply ingrained that, for example, he tended to replace the term *morphology* by *morphogeny* and *morphogenesis* with their suggestions of generative processes. For Guillaume, even when we are not using our language, it resides in the depths of the mind as an organized set of possible processes, as a programme ready to be activated by the thinker/speaker.

Thus Guillaume proposed that the potential meaning of a morpheme resulted from its position in the system. However, this solution to his former problem itself posed a problem: where does the system containing the morpheme come from? That is, if one accepts, say, the system of the French verb or the system of the French article as realities, as subconscious mental components of French, then one must seek out the conditions making these systems

possible. Here, then, was an invitation to probe even deeper into language, and for the next decade or so Guillaume addressed himself to this task.

In the years following *Temps et Verbe*, Guillaume explored the passing from potential to actual, from system to sentence, concentrating mainly on the further analysis of particular grammatical systems within the word. He was trying to demonstrate that grammatical systems are content systems, and that as far as grammar is concerned a language is a "system of systems." This manner of regarding language led him to seek the system of the parts of speech and what is presupposed by this system, the underlying structural mechanism of the word that is, the system of the word as a grammatical form. Guillaume, however, was not able to discern with any clarity the word's underlying constructional mechanism until he finally managed to discern the form of the mechanism of that most transparent of all words, the article.

It was in 1941 that Guillaume finally saw the mental operation underlying the system of the article: it consists of a double movement, the first of which carries from the greatest extent possible for any notion (the universal) to the least extent possible (the singular); the second, following on the first in operative "thinking" time, carries inversely from the least to the greatest extent. To each movement of the system corresponds a sign: the first, a contractive movement, is expressed by the indefinite article, the second, an expansive movement, by the definite article. This psycho-mechanism he depicted by means of the following well known diagram:



This constituted an important breakthrough for Guillaume because it finally gave him an operational view of the system of the article, on the basis of which he was able to account for the numerous uses observed years before. (It was a matter of determining where the movement was intercepted to produce the quantitative effect observed in discourse.) However, the significance of this mechanism as a scientific landmark stretches far beyond the theory of the article itself (cf. for example, Hirtle 1982, passim).

Reflecting on the *form* of the movements involved here, Guillaume soon perceived that this mechanism, a device which he called the *binary tensor*, could provide a representation of any variable relationship based on quantity. He showed how it provided a basis for the system of grammatical number within the substantive and he evoked it to depict the relation within the verb between time as an infinite stretch and time as a finite stretch (the present). On the level of the word, the binary tensor device permitted him to understand how a particularizing lexical meaning combines with generalizing grammatical meaning to receive a part of speech and thereby constitute a word. Here, then, he found the basis for his theory of the word and, by the same token, his theory of the parts of speech.

During the ensuing years, further reflection on this similarity of various systems in regard to their form — a mechanism consisting of a contractive, particularizing movement followed by an expansive, generalizing movement — provided Guillaume with a solution to his problem: the grammatical systems of a language like French, whether particular sub-systems like that of number in the substantive, or more general ones like that of the substantive itself, derive their form from the most general sytem of the language, that of the word. In this way he came to view the grammar of a language as a system of systems wherein the form of the general system of the word is reiterated in each of the subsidiary categories of words (the parts of speech). Confronted here with the most general possible form of a language, Guillaume postulated that this all-embracing language mechanism reflects one of the basic capacities of human thought: the ability to generalize and to particularize. In fact here Guillaume realized that he had reached the boundary between language and thought and that if he pursued his reflections any further in this direction, he would be leaving the domain of linguistics. And yet the solution he had worked out raised a further problem for the linguist: if each subsidiary grammatical system derives its form from the system of the word, where does the system of the word come from?

Guillaume soon realized that the word has the same general structure in every Indo-European language although the architecture of the sub-systems may be different in each language. That is to say, once he had glimpsed the mental infrastructure of the Indo-European languages, which gives rise to words necessarily provided with a part of speech, his constant practice of trying to understand by turning from a result to its prior generative operation led him to seek what had brought about this type of word structure. However, as mentioned above, Guillaume had already reached the confines of language in his analysis of the act of language, and so, refused the possibility of probing any deeper in synchrony, he was led to look at things from a different point of view. That is, without denying that the part-of-speech structure is the starting point for the speaker of an Indo-European language, the potential from which he undertakes an act of language in synchrony, he began

to regard this structure as a result from the diachronic point of view. This led him to focus his attention more and more on the processes giving rise to this result, on the means whereby man over the ages had been able to construct this mental edifice permitting him to represent and express his thought with such ease. As a consequence, during the last decade of his life, Guillaume left aside the consideration of particular grammatical systems and turned to reflecting on their glossogeny — the progressive edification of the major language structures attested in today's languages — and on the consequences which this new dimension of investigation held for the science of language.

Being careful not to foist onto other languages the type of word he saw in the Indo-European languages — to this end he often used the more general term "vocable" as being less tainted with Indo-European connotations — Guillaume attempted to discern the constructive mechanism, the sort of thought processes presupposed by the make-up of vocables observed in Chinese, in Arabic, in Basque, etc. The result is certainly one of the most original theories of language ever conceived: the Theory of Glossogenic Areas. This theory constitutes an attempt to explain how man, over the millenia, has been able to form the successive mental structures discernible beneath the different types of vocable found today, and how each such general structure governs the manner in which the architecture of vocables is realized in particular languages and how the vocables are actually produced as constituents of individual sentences. In short, this theory of glossogeny attempts to distinguish the different language types in terms of one constructional parameter and so to embrace the whole of language, both in diachrony and in sychrony, as a single phenomenon.

Guillaume devoted his last years almost exclusively to the Theory of Glossogenic Areas and to the conditions permitting linguistics to get beyond the phase of merely describing usage to become an explanatory science capable of throwing light on the nature of language. Unfortunately, he died before he could do much more than lay the foundations of this grandiose scientific edifice. What he actually achieved is more like the plans of a general theory of language — a landmark perceived on the horizon ahead — than a fully developed theory. Certainly, his writings do include the carefully worked out solutions to a large number of particular problems, as well as innumerable insights opening avenues for further observation and reflection. But since any scientific theory, however well founded, is something to be developed, rectified and ultimately outstripped and left behind, perhaps his most important legacy will prove to be the method he used from 1929 on to explore the hidden psychomechanisms of language processes: analysis in terms of operative time. Because it has already produced and is producing significant results, this method constitutes a challenge for any linguist, or at least any linguist who, interested in the mental nature of language, holds, with Guillaume, that language is "a mechanism for commuting what has been thought into something said."

NOTE

* This paper is drawn from the introduction to Guillaume (forthcoming), the translation of a collection of excerpts from Guillaume's lecture notes.

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TEXTURE AND COHESION: SOME COMPLEMENTARITIES IN SYSTEMIC AND COGNITIVE LINGUISTICS

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My purpose in this paper is to comment on some of the complementarities and to discuss some specific points of divergence between two approaches to the study of language and its use; Systemic linguistics (SL) and Cognitive-stratificational linguistics (CSL). Such a task is not without its difficulty, since neither school has encouraged or allowed the formation of a standard theory and no one particular version of either theory has gained ascendency to the exclusion of other versions. Also both traditions are still very much in a state of development and growth. There are many points of view, and both CSL and SL continue on their crooked paths of progress with no expressed or implied requirement that their practitioners keep in stride with an orthodox line of development. Lamb (personal communication) is now even reluctant to continue using the term stratificational since its use is sometimes mistakenly taken to indicate that the most important feature of the theory is its recognition of strata rather than its view that the static linguistic code consists entirely of a system of relationships. Likewise, Halliday has consistently emphasized that SL is not intended to be a homogeneous theoretical model, but rather an applied functional framework for analyzing real linguistic texts. This primary orientation towards data rather than theory reinforces the adaptability and vitality of SL.

Both Michael Halliday and Sydney Lamb have often commented on the complementarity of their respective conceptualizations of language (cf. Halliday/Lamb 1973). Lamb has, on occasion, referred to the two approaches as two dialects of the same language. Halliday has called for the use of Lamb's explicit formalization of linguistic relationships as a supplement for the less sufficiently formalized system-structure framework (cf. Halliday 1976b:26). Fawcett (1983), and Gregory (1983), among others have begun to incorporate features of CSL (and Tagmemics) into their versions of the SL framework. Fleming and others (1980), on the other hand, have been active in the opposite direction, supplementing an insufficiently exercised stratificational format with well motivated features from SL.

The similarities of the two models, which reflect

some two decades of mutual influence, are too numerous to mention in a paper of this scope. But both of them are relational theories of language, and they each recognize the heuristic importance of positing linguistic strata that are related to each other by means of a realizational rather than a compositional interface. Both implicitly reject a strict dichotomy between competence and performance, as well as the closely related distinction between semantics and pragmatics. CSL and SL thus share a fundamental criticism of current linguistics for its exclusive interest in a static linguistic competence, and they both reject dynamic (mutational) metaphors in the description of static relationships. So long as actual process, i.e., performance was excluded from linguistics, as it is in the Chomsky school, it was possible to use process metaphors without ambiguity in characterizing static linguistic relationships . The result was first Item and Process grammars and later transformational rules. The disadvantages of such metaphors became apparent whenever it became necessary to take into account actual process, as, for example, in studies of language acquisition and subsequently in studies of the actual use of language in encoding and decoding. The division of language into competence and performance also fostered the hope, if not the expectation, that idealized competence would turn out to be a determinable formal system with unique solutions involving nongradable relations. Scholars like Hockett (1967) were aware of the limits of this view as early as the middle sixties. Both SL and CSL view language as a nondeterminable system, notwithstanding their use of explicit relational networks in their descriptions.

One of the areas of strong interest shared by SL and CSL is the analysis of both the structures and the processes employed in the encoding and decoding of information in context, i.e., in the study of discourse. For SL, static relational networks are traversed by making choices in a chain of options leading from content to expression. Of particular interest in CSL has been the development of a workable relational formalism for use in characterizing the linguistic and cognitive phenomena that overlie and control grammatical structure (Lamb 1964; Hockett 1966). Terms applied to such phenomena within the literature include semology (Lamb 1964), hypersemology (Lamb 1966), gnostology (Lockwood 1972), and most recently conceptual structure (Lamb 1983), but there has been a lack of widespread agreement about what aspects of the cognitive/linguistic system properly belong within the purview of that system. It is,

however, generally agreed that the domain of semology includes three closely interrelated kinds of phenomena. The first is a representation of context-free knowledge organized under the rubric taxonomic hierarchy, and explicitly allowing for gradience by the use of AND/OR nodes and thresholds in the reticulum. This aspect embodies the speaker/hearer's propositional knowledge of hyponymy relations of the sort, `a canary is a bird; a bird is an animal, together with their related presuppositional networks. This is the context of culture. The second aspect is an identification of the notion of possible happening/event/process within the context of a single proposition. This aspect provides for a detailed account of semotactic events ,their participant roles, together with their circumstantial attributes. And by combining the taxonomic hierarchy of the first aspect with chains of event/role structures of the second aspect in a single network it is possible to account for the knowledge of schemata, i.e., text-like semological phenomena including, for example, the structure of a meal, a baseball game, a scenario, a conversation or a narrative. This is the third aspect of semology and it provides for a conceptualization of the notion possible semological text, initially represented in Lockwood (1972:110) as a series of propositions sequenced by an ordered AND. The first two aspects of semology taken together, can be viewed as corresponding closely to Halliday's highly elaborated notions of the ideational and the interpersonal functions of language. The third corresponds in turn to Halliday's textual function.

In the cognitive perspective language can be viewed as the product of broader human conceptual capacities and as proceeding from our exercise of them. Information received through the various sense modalities is processed selectively through focal attention and recorded in the short-term or episodic memory. Creative cognitive processes operating on such input result in predicational interconnections within conceptual networks that often do not correspond directly to sensory input, yielding the more abstract structures of the long-term or semantic memory. Both the episodic memory and the semantic memory can be viewed as reticula or networks that have text-like properties.

Of specific interest in linguistics is that one of the possible products of such sensory input and/or human creative processes is a linguistic text. According to this view messages are encoded or expressed by means of the activation of linguistic networks. Actual performance, as opposed to ideal performance, results in a particular instance of the

application of the competence-to-perform, i.e., a token text, as distinct from a possible text (cf. Copeland 1983).

Within CSL the perspective on text is both psychological and ethnographic, and in some specific ways has shared more with Chafe's (1973, 1974, 1976) recent work on the role of consciousness and memory in discourse than with that of Halliday and other European linguists working on thematic structure within the context of the Functional Sentence Perspective. Lockwood (1972) invoked topic/nontopic (Halliday's theme/rheme; speaker's point of departure) and focus (speaker's point of view; grammatical subject) as salient features of text and texture. Others (Copeland and Davis 1981, 1983; Davis and Copeland 1980) have investigated linguistic evidence for additional textual features such as the hearer-oriented cognitive constructs of consciousness and identifiability, and have attempted to relate the study of such phenomena in linguistics to their counterparts in cognitive psychology.

The term cognitive linguistics is not intended to be an eclipsing term, nor is it another label for a narrowly reductionist theory of language. The term is, instead, understood to apply to a broad range of perspectives in the approach to linguistic phenomena, encompassing the work of linguists and psychologists who are interested both in the ideational and interpersonal knowledge that a speaker/hearer has and what s/he can do with that knowledge in specific psychological and sociological contexts.

Here Halliday (1976a:9) differs from others in that he is primarily interested in what a speaker/hearer can do rather than what s/he knows. He adds that the two perspectives are, to a certain extent, simply different ways of looking at the same thing. But CSL includes a more directly psychological component in the modeling of the linguistic encoding and decoding of information, viewing them as essentially cognitive functions. This difference in emphasis and orientation yields significantly different notions of text, so that despite their similarities the two models have different contours, particularly in their treatment of textuality, context and cohesion. Another reason for this difference in the perception of the nature and function of textuality and cohesion is that SL is much more closely tied in practice to the tradition of literacy than CSL, and thus its metaphors of text and genre, etc. support that orientation [but cf. also Halliday (in press), and Halliday and Hasan (1976:34, et. passim.)]. CSL has, on the other hand, dealt more with orality, maintaining

first, that spoken discourse is primary, and second that the constraints placed on memory in spoken discourse are different from those in written discourse. Spoken discourse is fleeting and irreversible; its signal decays rapidly. And because it uses auditory rather than visual imagery and has predominately temporal rather than spacial organization, it is clearly more demanding on the episodic memory than written discourse is, cf. Tyler (1978:18) and Cole (1974:139).

Halliday and Hasan (1976) use the term cohesion to refer to the semantic relations within the text that tie the elements of a text together into a unified whole and define it as a text. Cohesion is involved where the interpretation of one element within the text is dependent on that of another one within the text. (For Halliday and Hasan such cohesive ties include reference, substitution, ellipsis, conjunction and lexical cohesion). Now we can take the point of view that cohesion in a text is the result of the speaker/hearer's ability or potential for producing an object that has the properties of a well-defined text, which is apparently the SL perspective; or we can take the complementary view that cohesion is the result of cognitive functions that are required in order to effect successful exchanges of information.

I would like to illustrate this latter point by citing a sentence from Halliday and Hasan (1976:3), where they quote a comedian who opened a monologue with the statement:

(1) So we pushed him under the other one.

The point is, of course, that without some context, either from the context of situation or from within the text itself, the hearer does not have the requisite information to decode this message. The sentence doesn't work, and the result is, in this case, humor. We could imagine scenarios of two different sorts that would have provided the necessary contextual information for a successful interpretation of the message, one linguistic and the other extra-linguistic:

A. The participants are looking through a series of snapshots from which it is clear from the visual images what the referents are.

B. The participants are carrying on a conversation within which it is clear from mention what the referents are.

Halliday and Hasan give primacy to intra-textual or

endophoric reference, because they are interested predominately in elements within the linguistic text. Exophoric reference, which ties elements in the text to elements outside the text, namely to the context of situation, is treated as a separate construct. This approach appears to identify text production as the explicit goal of speaker/hearers in language behavior. In CSL, on the other hand, the focus has been on the communicative function of speech as the primary goal, rather than on the related linguistic goal of producing well-defined texts. Here the emphasis is on the fact that the speaker is worried about the practical matter of getting done what he wants done, rather than whether or not he is producing a cohesive spoken text. Cohesion and texture are thus the result of subconscious cognitive constraints on the communicative functions of language. In making the encoding choices that are necessary to get his message across, the speaker always assesses the ability of the hearer to decode the message within the available context and includes the necessary contextual information, typically paring away redundant referential information by using pronouns instead of nouns. Sentence (1), above, together with scenarios A. and B. illustrate the point that the successful syntactic expression of the message is the same for endophoric as for exophoric reference, i.e., linguistically they are treated as if they were the same. This lack of contrast in the linguistic expression of endophoric and exophoric reference reflects a lack of cognitive salience in the distinction between them, with reference to text.

The common denominator for these two kinds of referring is psychological, namely, consciousness. What is critical here is that the context being signalled by the choice of a grammatical personal pronoun to represent the referent is the state of its being activated/conscious in the mind of both the speaker and the hearer at the moment of utterance. The speaker monitors what the hearer is thinking about or is conscious of (cf. Chafe 1976) and packages the information using cohesive devices in order to inform the hearer where in the memory to add the new information vis-à-vis the conscious or identifiable portions of the network. It does not appear to matter linguistically whether the conscious concepts have become activated by means of their presence in the context of situation or their occurrence in the verbal text. Experiments in cognitive psychology on integration and inference in comprehension and memory have shown that the memory does not clearly distinguish between contextual information supplied linguistically and that supplied only in the context of situation (cf.

Paris 1975). Upon recall the subject typically has more information stored than was present in the actual linguistic material expressed, i.e., information which he has inferred from the extralinguistic context. At the time of utterance a speaker/hearer is quite obviously conscious of the difference between the immediate context of situation and the verbal context, but in spoken discourse he is not always sure when referring back in the episodic memory to elements that have occurred previously in the discourse whether or not they were in the text or were introduced extralinguistically. The episodic memory does not consistently store that information. Apparently it doesn't matter; elements of both types are in the cognitive text and the cognitive text of a specific discourse includes more information than that which is supplied verbally. A speaker often does not even have rote recall of the last sentence he uttered in a discourse, to say nothing of the fifth sentence back from the end, except in its semantic contours; a fact which lends support to Halliday and Hasan's definition of text as a semantic unit. But as a semantic unit, text is a function of consciousness and memory. Cohesion is more encompassing than text and is the direct result of the speaker's necessity to instruct the hearer where to locate the incoming information in the consciousness or memory. A written text in graphic form must literally be read into the memory, by way of consciousness, by the reader. A spoken text is processed aurally by the hearer by means of focal attention, and is stored in the episodic memory, where it dissipates rapidly in the absence of rehearsal. At any one point in the process there is an upper bound on the amount of information that can be in the state of being simultaneously activated or conscious. The remainder of the relevant context must be referred back to, as it were,, not in any linear sense, but in the temporal sense of previously conscious in the discourse.

European linguists working within the functional sentence perspective also frequently make use of the expression vorerwähnt, or previously mentioned to mark one of the contextual meanings signalled by the use of the definite article in Germanic languages. But within the cognitive perspective, use of the definite article is taken to signal prototypically the context of conscious, i.e., Gv, as in:

(2) (Attempting to cross the freeway..)
'Wait!The truck is coming too fast.'

Likewise, the definite article can signal the context

previously conscious, i.e., recoverable (Rc) from the episodic memory of the discourse, as in:

(3) (Couple driving home after the movie...) 'The count was not a very sympathetic character.'

or it can signal the context computable (Cm), i.e., identifiable from the semantic memory (cf. Copeland and Davis 1981), as in:

(4) (Long before the moon comes up...) 'The moon is supposed to be full tonight.'

Gv and Rc characterize the antecedents of both exophoric and anaphoric reference; Cm involves only exophoric reference in the sense that the referent has not been previously conscious in the discourse, but Cm instructs the hearer to locate the intended referent in the context of culture rather than in the context of situation. The gist of all this is that within a cognitive perspective, most features that produce cohesion are ultimately products of the Given/New contract, where Given/New is construed not as a binary distinction, but rather as a scale from Given to Novel, and involving the variables conscious, and identifiable (in the memory), as specified for both the domain and the particular of the concept in question (cf. Copeland and Davis 1981):

Given: domain conscious
particular conscious

Some: domain conscious
particular nonconscious
nonidentifiable

Recoverable: domain nonconscious
identifiable
(in episodic memory)

particular nonconscious
identifiable
(EM)

Recoverable/Some:
domain conscious

particular nonconscious
identifiable (EM)

Computable: domain nonconscious
identifiable
(in semantic memory)

particular nonconscious
identifiable (SM)

New: domain nonconscious
identifiable (SM)

particular nonconscious
nonidentifiable

Novel: domain nonconscious
nonidentifiable

particular nonconscious
nonidentifiable

I think one can agree with Halliday and Hasan that exophoric reference is both phylogenetically and ontogenetically the prior form of reference and that endophoric reference is secondary. First, from a phylogenetic point of view. Hockett (1960) characterizes a prelanguage as a call system that lacks, among other design features, the crucial feature of displacement. Prelanguage thus required that the phenomenon being mentioned be immediately present in the speaker's context of situation. It thus seems reasonable to assume that protohominoids speaking a prelanguage lacking displacement and uttering an ancient call for danger were using exophoric rather than endophoric reference, and perhaps even a prepronoun rather than a prenoun. It is only after development of displacement of the phenomena referred to from the context of situation that prelanguages could have developed full nouns. Second, from an ontogenetic point of view, it is plausible that a child's first successful construal of, for example, the word for 'dog' represents the acquisition of a pronoun rather than a noun, for the reason that the utterance is heard only in the presence of a dog, i.e., in the immediate context of situation. Only later does the child develop the capacity to decode nouns in the absence of Givenness from the context of situation (cf. also Tanz (1980:4 et. passim), Lyons (1975), and McNeill (1975)). Third, from a discourse point of view, both nouns and pronouns can function in both endophoric and exophoric

reference, but it is difficult to justify the grammatical notion that pronouns are substitutes for nouns, particularly in a realizational frame of reference, where they are treated simply as conditioned alternative realizations of the same referents.

I have not done justice in this paper to the systemic point of view. In terms of the number of practitioners and in terms of the actual work with texts that has been done and is being done by the two schools, SL is by far the more highly developed. The comprehensiveness and diversity of the linguistic framework being developed and applied in SL, including its applications in the analysis of texts of many genres, its use in artificial intelligence, its applications in historical linguistics and in second language teaching, all attest to its success. Both SL and CSL have much to offer linguists working within any theoretical framework, but particularly because of their affinities, CSL and SL have a great deal to offer each other.

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ON THE NATURE OF THE INTERFACIAL STRATA

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Although stratificational linguists have done much research on the linguistic strata that occur in the interior of language, they have so far done very little work on the strata that occur at the edges of language, where a language has its interfaces[1] with the real world and with its media of communication. Moreover, very little research has been done on exactly how the stratificational model of language can be related either to human experiences of the real world or to the sounds, marks, and gestures that are used as the media of linguistic communication. As a beginning for such research, this paper will describe how a stratificational grammar can describe the interfacial strata of language--i.e. the strata which are located at the edges of a language, next to its linguistic interfaces.

The interfacial strata of language are partly like and partly unlike the strata which are further inside language. Figure 1 (after Lockwood 1972) shows the patterns which make up a stratum from the interior of language. Such a stratum consists of a tactic pattern, a knot pattern with DIAMOND nodes, two alternation patterns (one above and one below its knot pattern), and two sign patterns which join it to its neighboring strata. Figure 2 shows the parts of an interfacial stratum.[2] As far outward as its knot pattern, such a stratum is like the stratum shown in Figure 1, and its knot pattern probably differs only by having more 2-way DIAMOND nodes. But on the outward side[3] of its knot pattern, the interfacial stratum consists of a linguistic interface, a projection pattern operating across that interface, and a linguistic substance produced by that projection pattern.

The interface between the linguistic form and the linguistic substance is shown in more detail in Figure 3. Although the projection pattern consists only of single lines, it is not trivial. Its function is to state one-to-one relationships between things of two very different kinds: chiloXemes, which are abstractions

[1]This use of the term "interface" has been adapted from Hockett (1966).

[2]The Greek word *cheilos*, which can mean 'the edge of something', has been used here in making names for the interfacial strata and their parts.

[3]The two sides of the stratum in Figure 2 are labeled "outward" and "inward". The outward side of any interfacial stratum is its side toward its linguistic substance, whether that side is upward or downward.

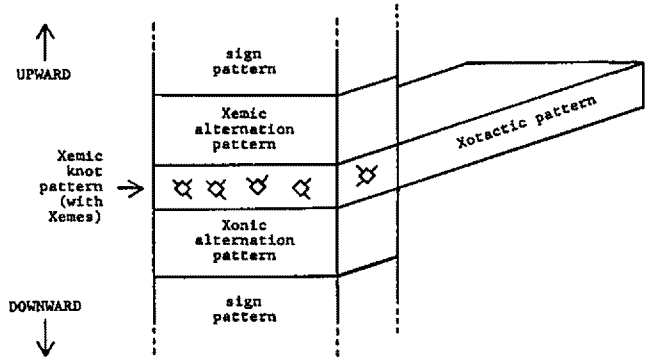

Figure 1. An ordinary stratal system.

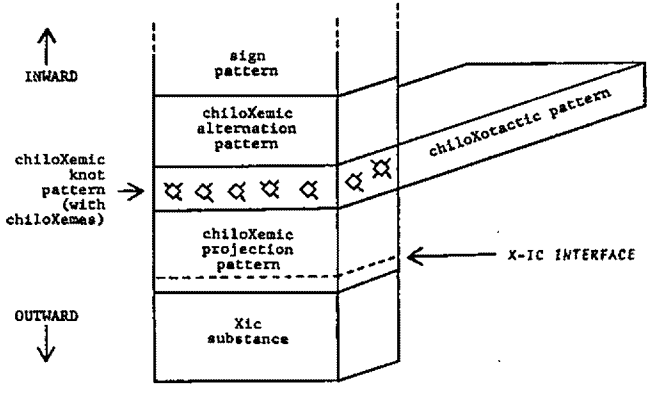

Figure 2. An interfacial stratal system.

within the linguistic form, and Xic hylmers,[4] which are within the linguistic substance and which are not abstract at all. Each Xic hylmer consists of two parts: a measurement procedure, which is an operation that can actually be carried out on the material of that linguistic substance, and a value, which is a fact about that substance which can be found by applying the measurement procedure to it.

The nature of an interfacial stratum may be illustrated by examples from the chilographemic stratum and the graphic interface of English. Two marks from the orthography of English, which are shown in Figure 4 along with the graphemic signs of shape that

[4]This term is derived from the two Greek words *hyle* 'timber', 'material' and *meros* 'part'. The suffix "-mer" can be used in making labels for any points within the linguistic network that do not fit into the system of -emes, -emic signs, and -ons developed by Sydney M. Lamb and described by Lockwood (1972).

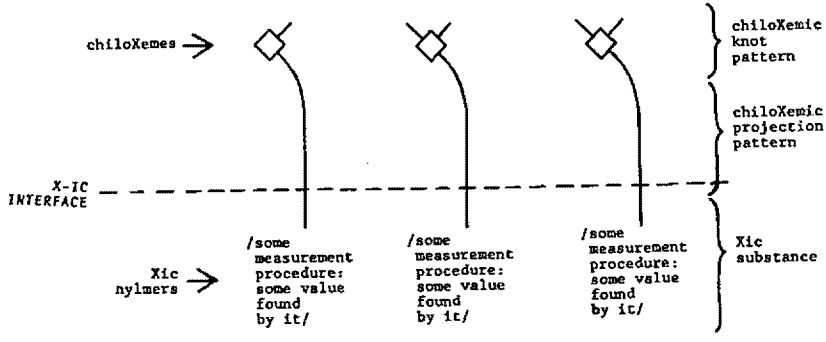

Figure 3. Projection across an interface.

Figure 4. Two marks and their respective graphemic signs of shape.[5]

they respectively embody, are the linguistic data that will be used in these examples.

Figure 5 shows a trace for the realization of GS/roman v/; this trace gives four different descriptions for a mark that has this shape.[6] The single graphemic sign describes the shape of the mark as a whole. The graphons are the minimum set of abstract features needed to distinguish this shape from all the other significantly different shapes of the language. The chilographemes are less abstract features which describe this shape at every place and in every way that it might be significantly different from some other shape.[7] The graphic hylmers state the actual measurement procedures which must be applied to this mark in order

[5]The following abbreviations are used here and in the rest of this paper:
GS = graphemic sign
GN = graphon
CG = chilographeme
GH = graphic hylad
m.p. = measurement procedure
m.s.r.b. = most surrounded region of background

[6]These levels of the graphonomy have been described by Herrick (1977), although some slightly different terms are used there.

[7]Some chilographemes can describe more than one place on a mark. For such a chilographeme, each place where it is used must be stated.

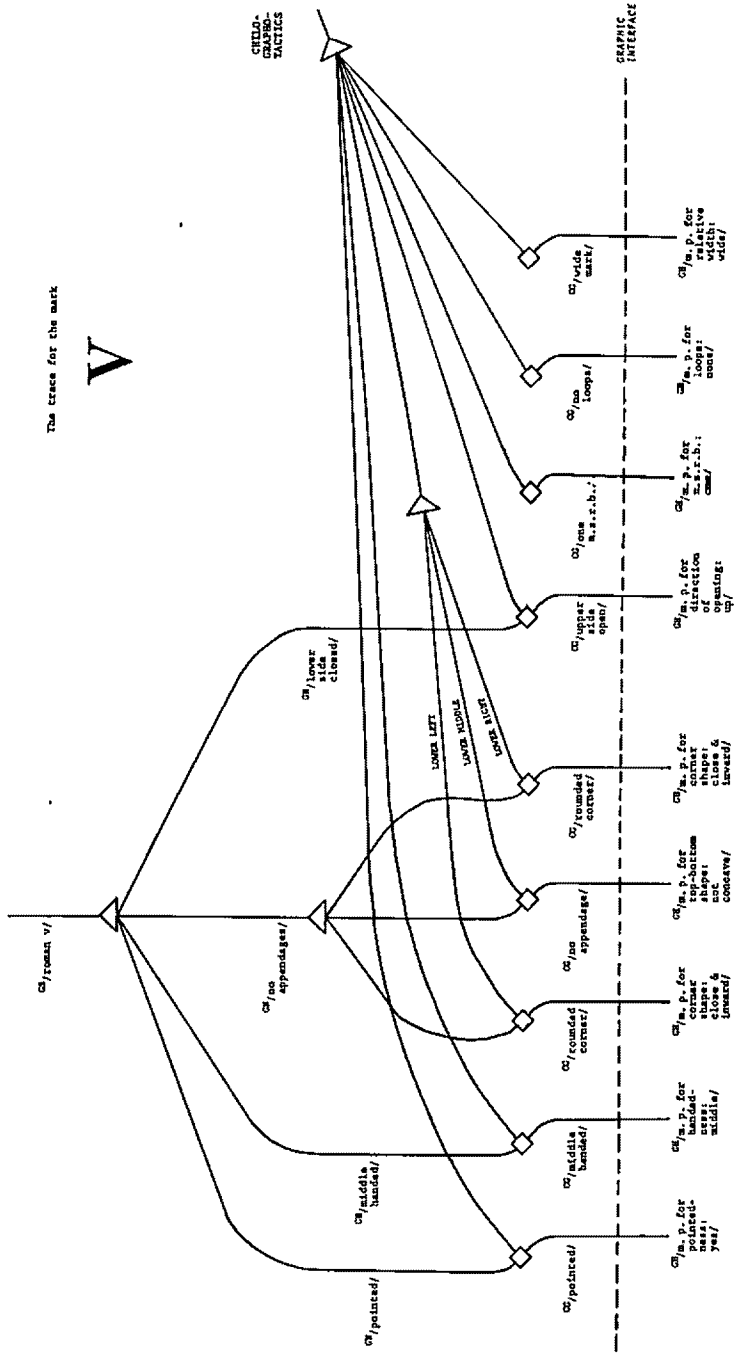

Figure 5. An example of ideal performance.

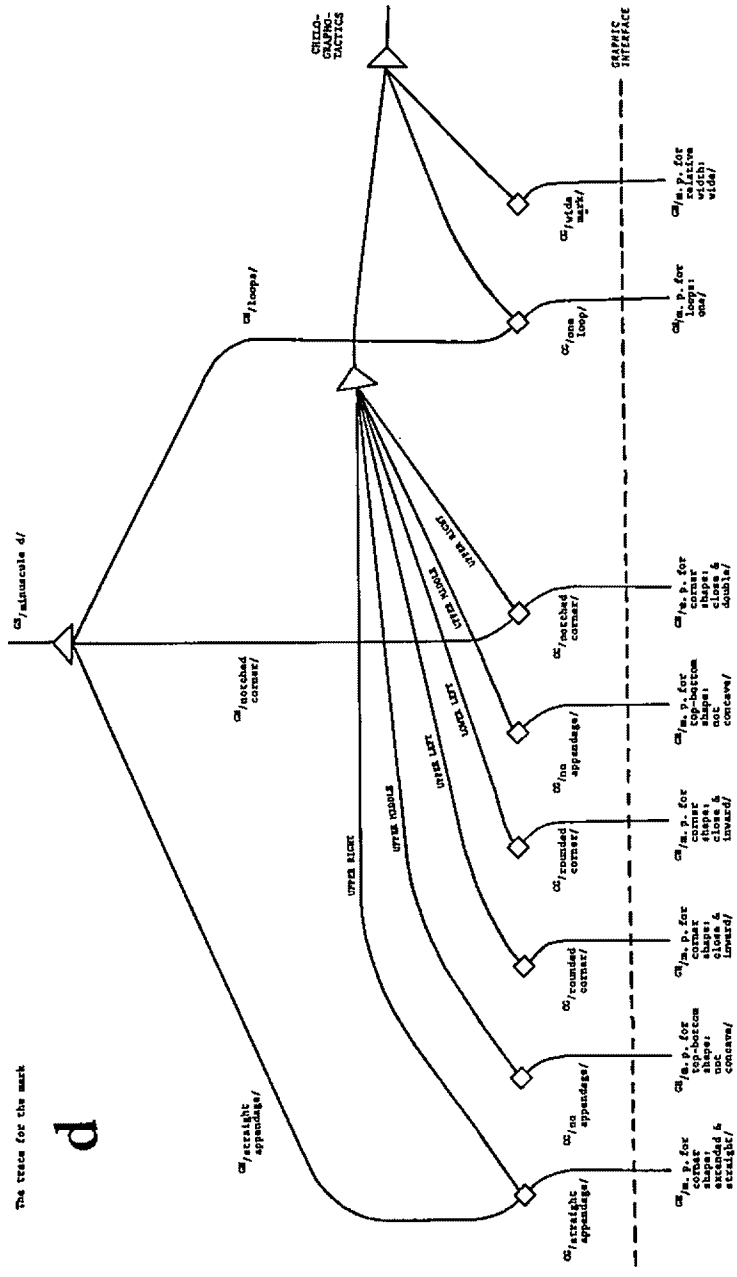

Figure 6. An example of ideal performance.

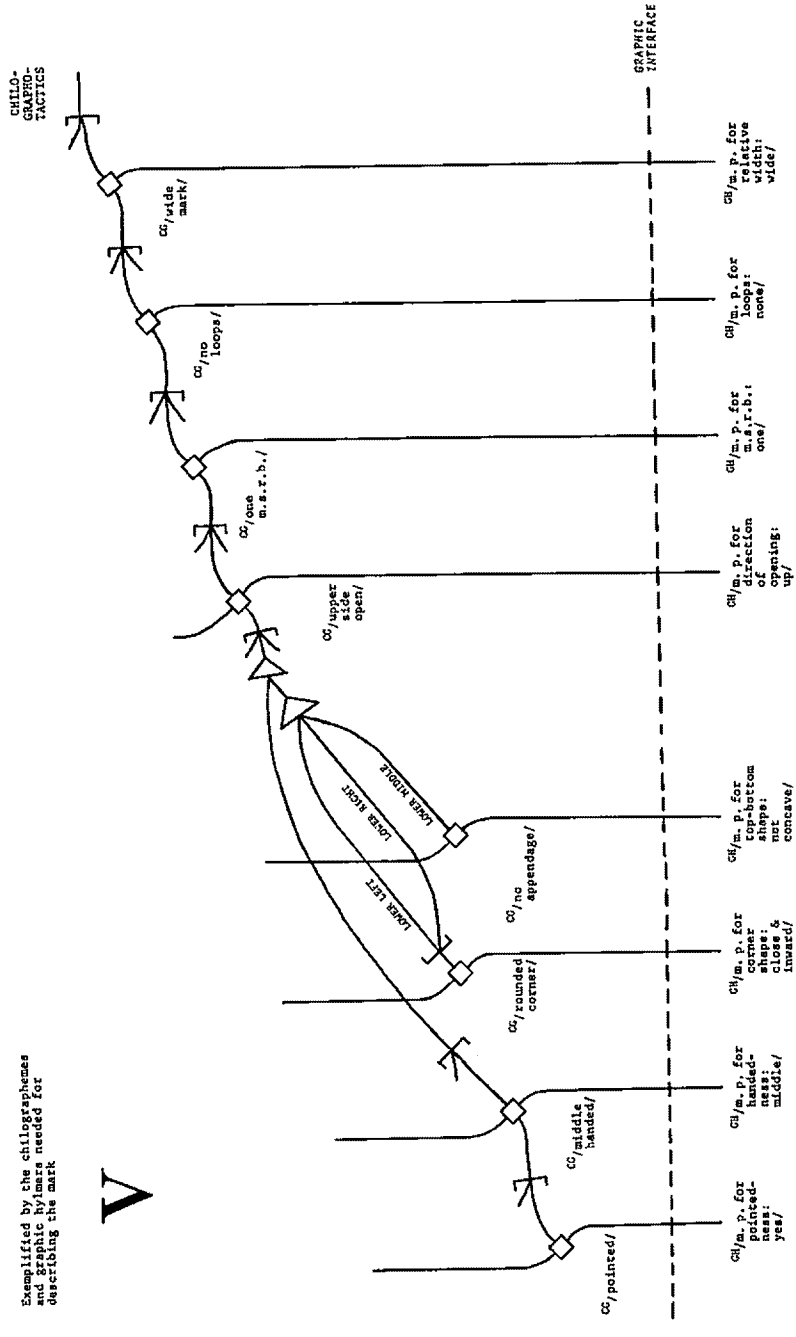

Figure 7. An example of competence.

to identify it and also to state the values which those procedures find. Figure 6 shows a trace for the realization of ^{GS}/minuscule d/ which describes that shape at the same four levels of the language.

The function of the chilographotactics of a language is to specify what marks can and cannot be well-formed marks of its orthography. Figure 7 shows the part of the chilographotactics of English which is involved in the realization of ^{GS}/roman v/. At its top, this part of the chilographotactics states that every mark of the English writing system is either wide or narrow; a mark having the shape 'roman v' is wide. It then states that a wide mark may have any number of loops, including none; a 'roman v' has no loops. It then states that a wide mark with no loops may have any number of significant indentations; a 'roman v' has one such indentation. The rest of the chilographotactics then defines the other parts of the mark which can have significant differences of shape and which must therefore be described by chilographemes. Some of the significant differences between 'roman v' and other shapes of the English writing system are shown in Figure 8.

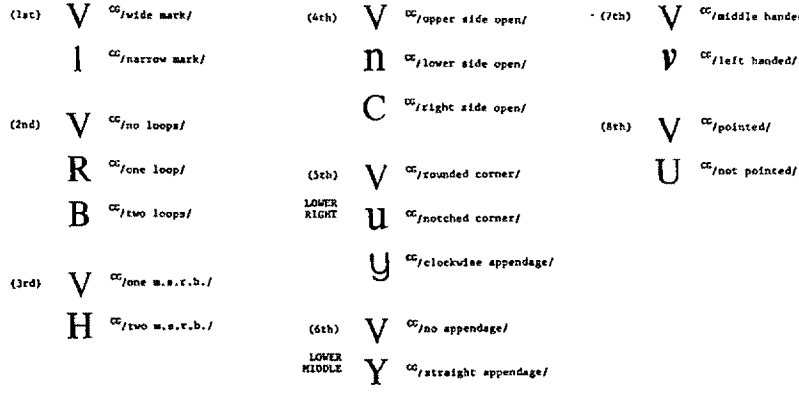

Figure 8. The chilographemes that realize ^{GS}/roman v/ and some chilographemes that contrast with them.

For each linguistic substance there is a measurement schedule, which is a practical statement of how to identify the sounds, the marks, the gestures, or the human experiences in that substance. A measurement schedule says to apply a certain measurement procedure to the substance; if that application finds a certain value, it says to apply another specified procedure; and so on, to the end of the schedule. The measurement schedule for a substance is, in some way, a projection of its corresponding chilo-tactics. Figure 9 shows a part of the measurement schedule for the graphic substance of English.

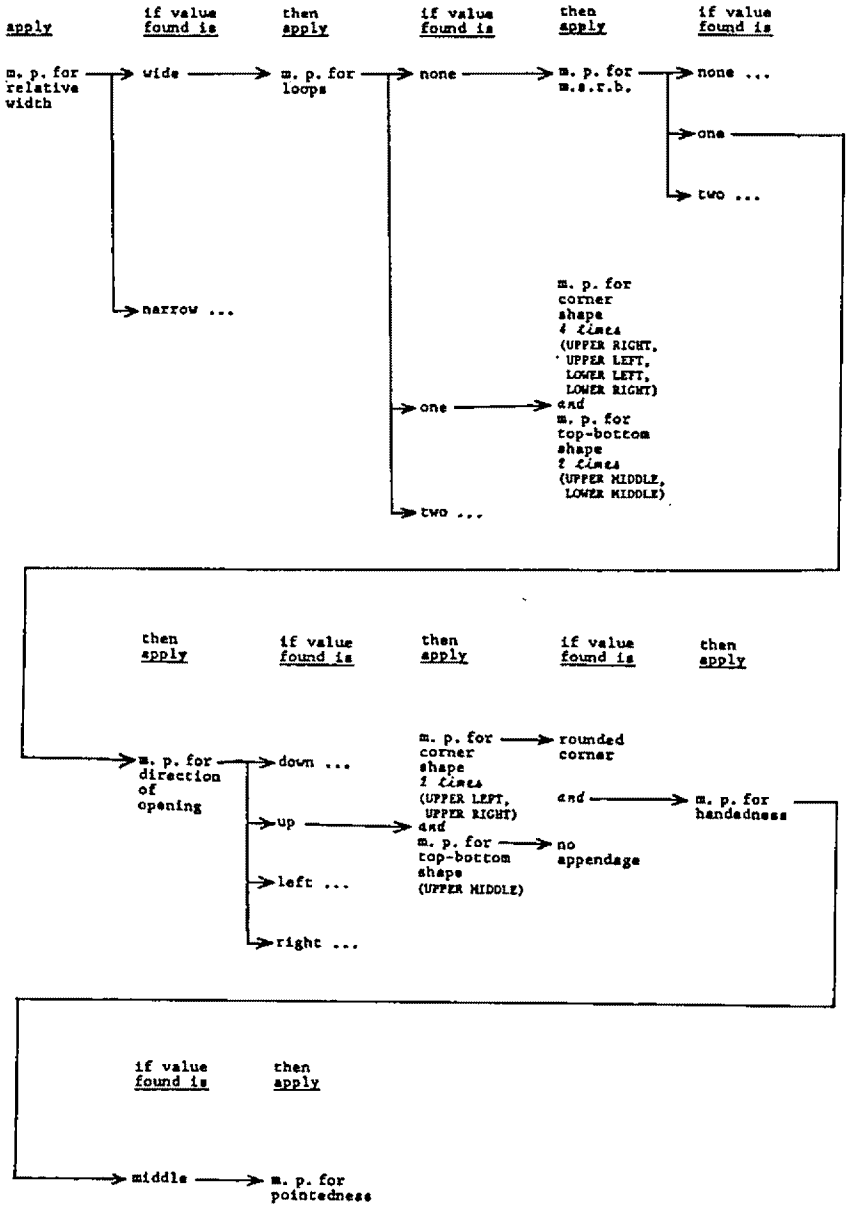

Figure 9. Measurement schedule for the graphic substance (its part sufficient for ^{GS}/roman v/ and ^{GS}/minuscule d/).

The marks that occur in the graphic substance of English can be produced in many different ways. Figures 10 through 12 illustrate three ways of using a hand-held writing instrument to produce a mark that has the shape 'minuscule d'. Figure 10 shows a sequence of three movements with such an instrument: a straight line is drawn, the hand is moved with the instrument raised, and a curved line is drawn. Figure 11 shows the same three movements made in a different order, while Figure 12 shows a sequence of four movements: drawing a straight line, drawing a curved line, moving the hand without drawing, and drawing another straight line.

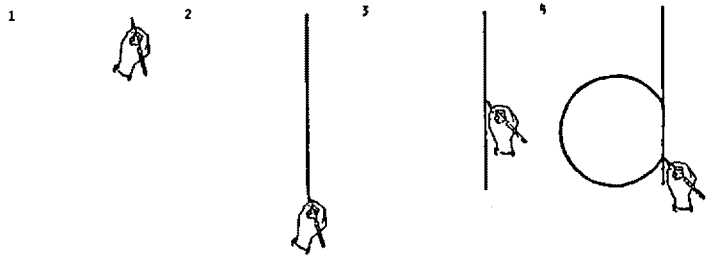

Figure 10. Drawing 'minuscule d' by hand.

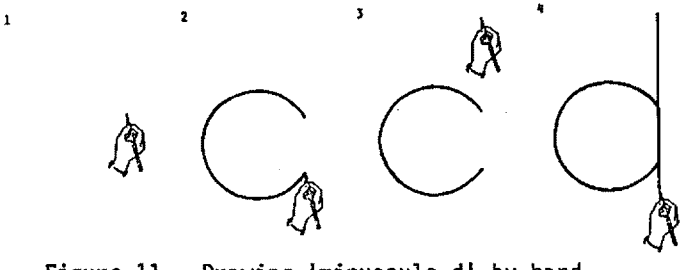

Figure 11. Drawing 'minuscule d' by hand.

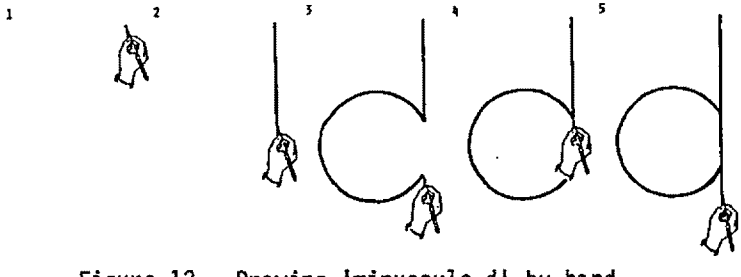

Figure 12. Drawing 'minuscule d' by hand.

Figures 13 through 15 show how the same result can be produced with the help of more elaborate equipment. Figure 13 shows which key must be pressed on a typewriter in order to produce such a mark. Figure 14 shows how to produce such a mark by using

printer's type; if a printer holds his stick in his left hand, as is shown, and if he reaches with his right hand into the case that holds his type and picks up a sort for a lower-case 'd' and puts it into his stick, then, by the proper use of some more machinery, the result will be the mark shown. And Figure 15 shows a computer program which, if it is put into a computer and is used for driving a plotter, will produce the mark shown.

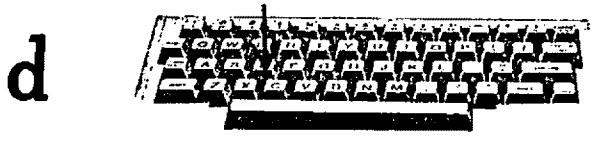

Figure 13. Typing 'minuscule d' on a typewriter.

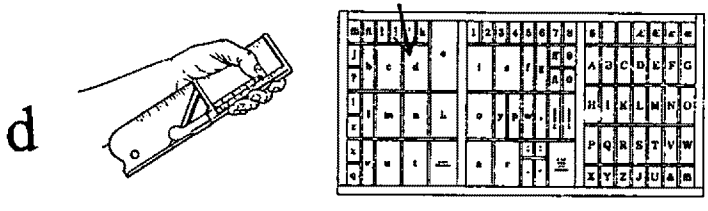

Figure 14. Printing 'minuscule d' from printer's type.

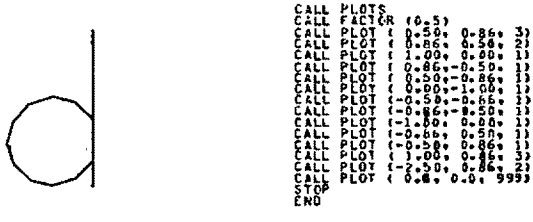

Figure 15. Drawing 'minuscule d' with a computer-driven plotter.

All of the marks shown in Figures 10 through 15 embody the English[8] graphemic sign of shape GS/minuscule d/, but these marks are produced by such very different sequences of bodily movements that a simple definition of how to produce such a mark cannot be isolated from the movements implied here. All that these movements have in common is the shape of the marks that they produce, and these marks are known to have the same shape only because fluent literates in the English language perceive them as having the same shape. Moreover, any other sequence of bodily move-

[8]This is also true of other languages that use the same script, but it seems best at this point to confine the argument to one language.

ments, no matter how farfetched,[9] will produce a mark with the same shape if its result is perceived as having that shape. The linguistic function of a mark within the graphic substance of a language must therefore depend on how it is perceived, not on how it is produced; and the definition of how to produce a mark that has the shape 'minuscule d' must be this: do anything whatsoever that will produce a mark which, when it is seen, will be perceived as a 'minuscule d'.

This definition implies three things about the chilographemic stratum of English and, by extension, about all the interfacial strata of all languages. (1) The way that a linguistic substance is produced and the way that it is perceived cannot be congruent. (2) The way that a substance is perceived defines (not linguistically, but as a matter of logical necessity) the ways that it can be produced. (3) The way that a substance is perceived is well defined by its language, while the ways that it can be produced are not linguistically well defined.

This repationship between how a substance is perceived and how it is produced has some important consequences for linguistic theory. As applied to the example discussed in this paper, it means that the graphonomy of English cannot use a single linguistic network for describing both the production and the perception of marks. The production of those marks must be described in a way appropriate to how they are produced, while their perception must be described separately in a way appropriate to how they are perceived. Two separate networks will therefore be needed near the graphic interface, although somewhere within the language those two networks must be joined into one.

Similar discrepancies will be found in the relationships between perception and production that occur within the other interfacial strata of language. Within the semology, there will be a chilosememic stratum which will handle the detailed facts of how a language is actually related to the real world of human experience; among the things that it will handle will be the semantic field of colors. It is commonly thought that colors can be described in terms of three parameters--hue, value, and intensity--which can be treated as three sets of chilosememes within the chilosemotactics. But colors can be produced in more than one way. If pigments that reflect light are used, different colors are produced by different combinations of three primary colors: red, yellow, and blue. But if colored filters that transmit light are used, different colors are produced by combinations of three other primary colors: red, green, and blue. Sometimes both sets of primary colors must be used, as in theatrical stage lighting, which uses light that is colored first by transmission through filters and then by reflection from pigments. A designer of stage lighting must therefore

[9]As, for example, the movements necessary to cause an airplane to sky-write a trail of smoke having an appropriate shape.

do whatever is necessary with both kinds of primary colors so that the audience will perceive the result as the desired color.[10]

This relationship between perception and production also has consequences for the phonetic interface of language. Phonetics, which is the general name for the sciences that study the phonetic substance, is actually divided into three distinct branches: articulatory phonetics--which studies how speech sounds are produced, acoustic phonetics--which studies speech sounds in isolation, and auditory phonetics--which would study how speech sounds are perceived. Autonomous, well-developed sciences of articulatory and acoustic phonetics now exist, and linguists have made many attempts to analyze the differences among speech sounds, drawing on these two sciences. However, none of these attempted analyses has been really satisfactory. It may well be that, because the perception of a linguistic substance is logically prior to its production, an analysis of the linguistically significant differences among speech sounds in the phonetic substance of any language must be made in terms of auditory features; which means that the development of a really adequate linguistic phonology must await the development of an autonomous, well-developed science of auditory phonetics.

[10]I want to thank Donna Cobb Vogt for telling me all that I know about stage lighting.

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THE LAW OF COMPONENTIAL PARTITIONING

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In a previous paper (Yngve in press) I pointed out that linguistics can not be disciplined simultaneously by grammar and by science because grammar and science are incompatible. We are thus forced to choose between two alternatives, a grammatical linguistics or a scientific linguistics. In this paper I will explore the second alternative, a scientific linguistics.

1. Background

For 150 years linguistics has pursued the goal of developing a science of language. But it has not been clear what kind of a science that would be. Saussure noted that "other sciences work with objects that are given in advance and that can then be considered from different viewpoints; but not linguistics.... Far from it being the object that antedates the viewpoint, it would seem that it is the viewpoint that creates the object" (1966:8).

Some people would deny that the phenomena of linguistics can be approached scientifically. Some would even go so far as to say it is wrong to try, for they imagine that it would somehow lessen the dignity of mankind. Among those who would approach linguistic phenomena scientifically, some are of the opinion that there are two kinds of science, mental science and physical science, cultural science and natural science, Geisteswissenschaft and Naturwissenschaft. Others would disagree, saying that there can only be one kind of science, the kind exemplified by the physical and biological sciences.

Bloomfield seems to have believed in the one-science position but thought that linguistics would have to adopt a two-science position until all the other sciences, especially psychology and physiology, were close to perfection. "Until that time," he said, "phonology and, with it, all the semantic phase of language study, rests upon an assumption, the fundamental assumption of linguistics: we must assume that <u>in every speech-community some utterances are alike in form and meaning</u>" (1933:78). Although this may appear to state an empirical fact, it is clear from Bloomfield's discussion that it has a different status. It introduces by assumption both a syntagmatic and a paradigmatic segmentation of the speech stream not inherent in the physical sound waves and establishes these segments as objects of language with their forms and meanings in conformity with the grammatical tradition. This

assumption is special to linguistics, and has no scientific justification. Thus language, unlike the subject matter of the other sciences, is created by assumption at the most fundamental level.

In this paper I will show how a new foundation for linguistics can be laid without any special assumptions. This would place linguistics among the natural sciences along with the physical and biological sciences.

2. A focus on people

Instead of starting with the assumed objects of language, which are not given in advance, let us start instead with people as our objects of study. These are real objects given in advance and known to our senses; they do not have to be introduced by assumption. They can be and are studied from different points of view in different sciences. In linguistics we will study them from a linguistic or communicative point of view. This will be a human linguistics rather than a linguistics of language.

In starting with people as objects of study we are starting with the locus of the phenomena. In any science we are free to choose the phenomena we wish to focus on. These would be the phenomena that seem prescientifically to be interrelated but not yet sufficiently understood by science, the phenomena about which we are officially curious. Thus in human linguistics our scope embraces the linguistic or communicative phenomena associated in some way with people.

As our science progresses it will develop a body of theory that is devised to shed light on the phenomena, to show how it is interrelated, and to provide us with insight and understanding. As the body of theory develops it may reveal new interrelations that will stimulate us to broaden our observational scope, or it may show that some of the phenomena that we initially thought were related to the rest are really not very closely connected and should rather be put off into another discipline.

In starting with objects given in advance we follow normal modern science. This is Galilean science, where theories can be tested against observations of the senses, not Cartesian science, which would start with intuitions and subordinate science to a priori philosophical preconceptions. In human linguistics, our theories are theories of a physical reality, people.

There is a clear distinction between the people that exist in the real world, and our theories of people that we invent in an effort to understand how they communicate. Let us honor this difference terminologically so as to avoid confusion. For the real objects we will use the terms 'person', 'people', and 'group'. For the theory of a person we will use the term <u>communicating individual</u>. For the theory of a group of people, along

with the relevant aspects of the surroundings, we will use the term linkage. A linkage includes not only communicating individuals as constituents, but also channels representing the means of energy flow, props representing any communicatively relevant objects, and a setting to represent the communicatively relevant aspects of the environment.

Thus we have an object of study given in advance, people; a linguistic or communicative point of view from which we wish to study the people; a growing corpus of observations of people that seem relevant to learning how they communicate; and a growing body of theory that we can test against the growing evidence. This includes our major theoretical constructs, the communicating individuals and linkages that represent people from this point of view.

3. Observed similarities and differences

The first thing that we observe about people from our point of view is that everyone is different linguistically.[1]

The status of this statement is that it is an observational fact. We do not have to take it on authority; it can be confirmed. Anyone who doubts it can study many pairs of people. He will find them all different communicatively. He can then try to find two that are the same, but even identical twins will show slight differences because of their different experiences.

We also observe that different people show communicative similarities. This is also an observational fact that can be tested and confirmed.

When we look at groups, we find that they, too, show similarities and differences. No two groups are the same, but different groups often are observably similar in some respects to other groups. Thus not only will our theoretical constructs, the communicating individuals, all be different, so too will all linkages, if fully defined, be different.[2]

4. The law of componential partitioning

On the basis of these observed similarities and differences, we can propose an empirical law. This law, called the law of componential partitioning, can be stated as follows:

> A communicating individual or a linkage can be represented in terms of a set of component properties in respect to which different individuals or linkages show partial sames and differences, and in respect to which the same individual or linkage shows partial sames and differences at different times.

This law establishes communicating individuals and linkages as theoretical entities structured in terms of properties and testable against the reality of observed people and groups. It is the most basic law regarding the linguistic or communicative structure of people and groups.

The properties of the individuals are called linguistic properties. The properties of the linkages are called linkage properties.

Note that the law of componential partitioning plays a role in human linguistics somewhat similar to the role played by Bloomfield's fundamental assumption in the linguistics of language. Bloomfield's assumption creates objects of language that by assumption show similarities and differences and that are then analyzed in terms of their properties. The law of componential partitioning points to people as objects that are given in advance and establishes empirically that they show similarities and differences and therefore can be analyzed in terms of their properties.

Thus whereas the linguistics of language rests on an unsupported special assumption, human linguistics requires no special assumptions. It rests at this most fundamental level on an empirical law testable against observations by the senses of the real world.

It is worth noting also that in this respect human linguistics is like the physical and biological sciences. Physics studies the properties of matter from the physical point of view. Chemistry studies the properties of matter from the chemical point of view. Biology studies the properties of living matter from the biological point of view. Human linguistics studies the properties of people from the linguistic or communicative point of view.

5. Methods of sames and differents

As is well known, Bloomfield's assumption provides a foundation in linguistics for the methods of sames and differents that were worked out in detail by Bloomfield and those who were influenced by him.

On the basis of the law of componential partitioning these highly-developed methods can be carried over into human linguistics, where instead of being used to establish grammatical properties of the assumed objects of language, they will be used to establish linguistic or communicative properties of real objects, people, individually and collectively. These properties, being theoretical constructs, will enter into the hypothesized theoretical entities, the communicating individuals and linkages, to provide a picture or model of the people or groups from the point of view of how they communicate.

The evidence we will use will be the observed similarities and differences in communicative behavior, and the observed same and different linguistic and nonlinguistic reactions of the others to the communicative behavior. In Bloomfield's Jack and Jill example, where Jill sees an apple in a tree and makes a noise with her larynx, tongue, and lips, we can use as evidence the observed fact that Jack gets the apple for her.[3] But our theories will not be external theories of speech or language, or even of the behaviors, but theories stated in terms of intrinsic properties of people, individually and collectively.

There has always been a temptation to consider language or grammar as if it were a property of people. This is a mistake that has caused confusion in much of the grammatical writings from ancient times right up to today. If one means by language the ancient philosophically oriented conception of language as a relation between sound and meaning given by grammar and lexicon, then to maintain that people, individually or collectively, literally have grammars in their heads that they use when speaking is a fallacy, the psychological and social reality of grammar fallacy. People exist in the domain of real objects. Language and grammar in this technical sense exist in a different domain altogether, a philosophical or logical domain created by assumption. To thrust grammar into the heads of people as a theory of how they communicate is a mistake we have all made.

6. Analysis in terms of properties

Relative to any bit of communicative behavior, there are four types of properties: categorial properties, conditional properties, procedural properties, and foundational properties. These types of properties and a notation for them can be illustrated as follows.[4]

Let a be a property and -a (not a) be its negation. Examples would be having the turn in conversation or not, being on the spot to answer a question or not, having referred to Joe or not, or in the process of explaining who Joe is or not. The dimension of contrast for a and -a is called a categorial property. The value that this property has at some moment, either a or -a, is called a conditional property. These properties are established on the basis of recurring sames and differents in different individuals and the same individual at different times.

The structure of an individual (or the structure of a linkage) specifies for each property the conditions under which it changes from a to -a, say, or from -a to a. Such specifications are called procedures. Suppose that we find that a changes to -a whenever it becomes true that the conditions b and -c simultaneously hold, or the conditions -d and e and f simultaneously hold (where b, c, etc. are also properties). This can be straightforwardly written as the following procedure:

$$(b \times -c) \vee (-d \times e \times f) :: -a, t_1$$

which would be read as follows:

> The conditions b and -c or the conditions -d and e and f becoming true causes the a, -a category to take the value or condition -a with a delay of t_1 units of time.

Now of course such a procedure could not be executed unless there were some mechanism for implementing categorial and conditional properties and executing procedures. Such logically necessary properties are at a lower level of analysis and are called foundational properties.

The challenge for human linguistics, and the next order of business, is to identify as many specific properties as possible and work out the relevant procedures involved in their dynamic changes during communicative behavior, thus working out the beginnings of the structures of individuals and linkages. It is now clear that in principle this can be done, and that the structures can be represented in the above formalism and notations based on it. Then the resulting predictions can be tested against further evidence. In this way the whole of linguistics can be rebuilt entirely on scientific foundations. To do it will be a large task. It will require not only careful observational work, but the development of additional structural principles and laws on the basis of the evidence, and additional appropriate improvements in notation, probably involving computer techniques, and their careful scientific validation.

The scientific validation of the structural principles and notations proposed is most important if we are finally to have a linguistics resting only on the standard principles and methods of science and not leaning on any a priori assumptions. In human linguistics we are not free to introduce and use notations that have not been scientifically validated.

In working out the structures of individuals and linkages it is important to try not to be misled by existing analyses in terms of grammar. Thus the above notation is not to be confused with grammar rules of any kind, which represent an entirely different kind of concept. This problem of guarding against error through bias from the very powerful and omnipresent grammatical tradition is one of the greatest practical difficulties facing work in human linguistics. The more so because we will certainly want to preserve the wealth of valid results available in that tradition. Considerable attention has been paid to this matter. Indeed there is a rough principle of correspondence relating insights in the old framework to those in the new. But it is more than a question of translating into a new language and a new culture because it inevitably will involve reanalysis of the data and often it will be necessary to obtain additional data to answer questions that

come up in the new framework but were not even considered within the old.

7. Scientific criteria of truth

The major difference between Chomsky and Bloomfield is that Bloomfield tried to introduce scientific methods into linguistics to the greatest extent possible while still embarking on the study of language through grammar. To his credit he managed to reduce all the a priori content of such a linguistics into a very carefully worded assumption. Chomsky, on the other hand, possibly realizing the basically a priori nature of the foundations of the study of language, has been busy expanding the role of a priori assumption, thus moving linguistics still further away from science and back into philosophy.

Human linguistics sympathizes more with Bloomfield's thrust but tries to go the whole distance and establish linguistics as a true natural science. It does this by forsaking the study of objects that have to be introduced by assumption and turning instead to the study of people from the point of view of how they communicate, for people are creatures of nature, obeying the laws of nature, and amenable to study in a natural science, a purely linguistic science not resting on physiology or psychology.

The reason that a one-science view in approaching the phenomena of linguistics is superior to the zero-science view of the doubters, the two-science view of the older linguistics, or the anti-science view of a rationalistic Cartesian linguistics has to do with the criteria of truth.

The principles and methods of science have been developed over the centuries to provide the most secure basis for our knowledge of nature so far devised. It has enabled us to unlock many mysteries in the physical and biological sciences, even processes of life, growth, and reproduction, long thought to be completely beyond the reach of science, an ultimate mystery. It has done this in part by rejecting all unsupported assumptions beyond the minimum assumptions of all science.

The trouble with introducing special assumptions into a discipline over and above the minimum assumptions of all science is that they can not be tested. If they cannot be scientifically justified they can not validly be maintained against competing assumptions or against an approach without special assumptions. If anyone could introduce any assumption into the discipline he pleased how could we choose among them? In practice it has usually boiled down to matters of charisma, authority, tradition, partisanship, or who can yell the loudest. This is not science. The result has been the multitude of kinds of grammar we are plagued with, each starting from slightly different assumptions, and the continual reworking of grammar according to new sets of

assumptions.

The trouble with Bloomfield's assumption or its equivalent is that in ratifying traditional unsupported views stemming from the ancients and carried down to us in philosophy and in normative grammar it creates what Kepler and Galileo referred to as a world on paper (Drake 1981:214). Grammar as a theory of language is a theory of a paper world introduced by assumption. Science studies the real world.

For these reasons human linguistics takes the one-science view where its theories can be tested against observations of the real world. Here the criterion of truth is evidence from the senses and valid reasoning from evidence from the senses. It then becomes possible to develop a body of theory that can be tested and validated scientifically even at the most basic level. If it passes the tests it may never have to be changed again.

If we agree on the goal of studying people, and it seems that most linguists do, and if we agree that the goal to study people must take precedence over the study of language in the technical sense, as I think we must, then there is the possibility of agreeing on linguistic structures in terms of properties, because there is the possibility of appeal to observations of real objects, people. If we can do this, linguistics will become a true natural science standing beside the physical and biological sciences. And who knows what mysteries such a science could unlock?

NOTES

[1]This has been noted many times in the past. "The truth is," said Hermann Paul, "that at any given moment within any given community there are as many dialects spoken as there are individuals to speak them" (1889:21). Bloomfield noted that "if we observed closely enough, we should find that no two persons -- or rather, perhaps, no one person at different times -- spoke exactly alike" (1933:45).

[2]The communicative similarities of people are not usually noted and reported in this way, though the differences are often remarked. The similarities in the way people speak are usually assimilated instead to language with its built-in concept of uniformity, and the differences are then attributed to errors by us mere mortals who inevitably fall short of the ideal. Saussure spoke of language as not being complete in any speaker; it exists perfectly only within a collectivity (Saussure 1966:14). Chomsky spoke of an ideal speaker-listener in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by errors, memory limitations, and such (1965:3).

But to be sidetracked at this point by a priori assumptions of uniformity would be to put ancient theoretical preconceptions

ahead of observation. For us the similarities and differences are observational facts about how people communicate, and they should be accounted for in the theory.

[3]The ability to make use of data of this kind in human linguistics circumvents the intuitionistic objections to data-oriented methods in the linguistics of language.

[4]Types of properties have been discussed elsewhere (Yngve 1975a, b, c, 1981). Current views will be outlined here.

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TOWARDS THE LINGUISTIC ANALYSIS OF ONE'S OWN POEMS

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1. CONCRETE POETRY COMBINED WITH VOICE QUALITY AND INTONATION.

Recently I bought an Osborne computer, joining the current generation. I experimented with it, to "draw" a woman's face. The result interested me poetically, so I added to the picture two brief lines and a title to make the picture part of social interaction. But the social interaction did not come through clearly enough. So I revised it, adding quotation marks to show that two people were involved, and adding a comma after "yes" to give a different character to the response--one of pondering, rather than one merely of reply (see Figure 1).

But a further revision was needed to make it do what I now felt desirable: I added a growling voice quality, in brackets, to show annoyance, followed by pseudo-sweetness carried by intonation. (Four intonation levels are indicated by the lines--high, just above the letters, as in "yes", extra-high is above the high; mid comes directly below the letters, and low below that.)

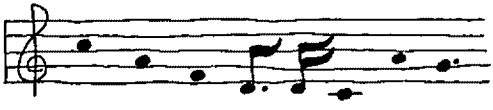
The fall from extra high to low adds intensity and finality to the first line. Rise from low to high, at the beginning of the second line, shows deliberateness with implied incompletion; and then the rise from mid to extra high implies a deep politeness --which is only to be overridden by the larger context of the growl. (For a sample of more extensive marking of intonation and voice quality, see Pike and Pike, Text and Tagmeme, in press.)

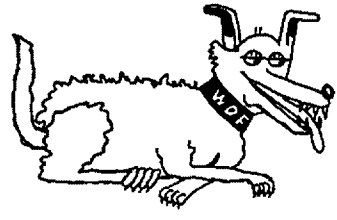
```
                    ....YOU...

          o Oo_
         o      -          "Yoo|uu!"  [Growl]
         o ?   +
          o     \
         //     =
       ///   -__
          | |              "Ye|s, Dar|ling?"  [Sweetly]
          | \

Yoouu!
Yes darling?
```

Figure 1

SILENT NIGHT

Purse your lips and
    Whistle loud, soul:
"Who's afraid of the..."





("God is dead!")
    Past your inner,
Personal graveyard,
    Tiptoe--

Wish might just--
    Shh--be f-a-l-s-e.
Ohh! Hark!

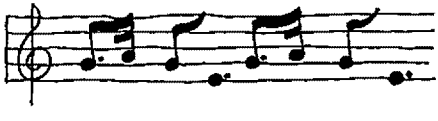


Figure 2.

2. WORDS PLUS INTERSPERSED MUSIC

Sometimes, however, regular music, rather than speech intonation, can be useful to help a poem carry its impact. In Figure 2, the poem Silent Night exploits this fact.

The words in the poem have been revised. It started as Whisper!/"God died."; the first line was eliminated and the second replaced with God is dead.

But this does not show the real intent of the poem, written in October 1967, in California. At that time there was a theological movement echoing around the world, labeled as "God is dead". I didn't agree with that sentiment, and decided to say so in a Christmas card which I was preparing for my friends; hence the title Silent Night. So I tried to use irony to make my rejection of the viewpoint clear. To do this I pretended that God was the "big bad wolf" and wanted to put into the first verse the line Who's afraid of the big bad wolf--but instead of using the words the big bad wolf, I put in some musical notes. I hoped that readers would recognize that I was trying to suggest that they hum the tune, of that name, known to them. But my revision

required help of a musician. Eventually I got the notes in there which were closer to the actual music than my make-believe ones at the start!

I continued with the sarcasm, pretending that God might in fact be dead--until suddenly one hears music again! This time, however, the music was coming from the angels, at the birth of Christ, reflected in the music of Silent Night.

3. OFF-NORM SYLLABLE STRUCTURE.

In the story of Moses, God told him to go to Egypt to order Pharaoh to let Moses' people leave. Moses objected to going, saying that his speech was slow and halting--or, as paraphrased in The Living Bible, I have a speech impediment (Exodus 4.10). In the poem Moses--and Me (Figure 3), I stretched this further, to represent it by stuttering. Although I mentioned the stutter in the first draft of the poem, it wasn't until two or more revisions later that I explicitly introduced more of the spelling which represented the stuttering, to heighten the impact and try to elicit a feeling suggestive of the original feeling. I used it in a poetic crescendo, by introducing it first at the end of the fourth stanza, and then twice in the last one.

MOSES--AND ME

Too scared,
To talk...
Too hurt,
To try.
Ready to die.

I'll run--
Not stay...
I'll cry--
Not pray,
To-day.

Nor tomorrow--
I wouldn't dare...
Nor talk--
They'll stare!
I stu-stutter!

"Go," He said.
"N-no", I said...
"Yes," He said
"Oh!!" I said
So, I w-w-went.

Figure 3.

There were further revisions, which I have not shown in detail: I left out two lines: Too weak/ to walk, since they did not reinforce the initial introduction of the problem of speech. And I changed the second stanza from orders from God (Run don't stay/ Cry--don't pray) to first person, to keep a greater unity of Moses as the speaker with the two interacting in the last stanza.

4. MULTIPLE MUSE ON A THREE BY FIVE SLIP.

Sometimes the urge to write comes when the only paper available is a 3 x 5 slip. Figure 4A gives a poem which was originally drafted in this way.

SOMETHING GOOD WILL COME OUT OF IT

Abraham: It's funner to have heirs (cf. Gen. 15.2-3)
Than to be just "salt" (cf. Mt. 5.13).

God: Your "house" won't rot.
Your work won't die.

Me: I'll try, but cry;
Trust, not bust.

Figure 4A.

It takes the promise of God to Abraham that he will be a great blessing--and that Abraham's cry for a son and heir (cf. Genesis 15.2-3) will be met. Then, it applies it by implication to myself, by a transition through the figure of speech of salt, since Jesus says (cf. Matthew 5.13) that we should be seasoning to help make the world tolerable.

In Figure 4B I give a photograph of the 3 x 5 slip on which the first draft material was in fact written. In the original of that slip, however, I had used three or four colors from a 4-color pen, so that various layerings were at the time distinguishable better than they are on this black-and-white copy.

In Figure 4C I give lines representing bits from the preliminary draft, showing some words which have since been crossed out or added; material which has been deleted is crossed out with hyphens; material added is shown in brackets; material moved in position is enclosed in double parentheses. Thus the beginning title was old Line 1 ((Abraham)) which became a label for a new paragraph. The revised title then came from the upper left-hand corner of the slip. Similarly, I first tried yeast, and alternatively candle, in Line 6 of Figure 4C, but ended up with salt; and the word just replaces a. Old Lines 7 and 9 reverse in order, to hold better coherence of heirs with house; and rust seemed less consistent as a metaphor with house (a metal house would not have been appropriate for the time) than rot (of thatch).

To arrive at the third section of Figure 4A, I deleted Line 12 of Figure 4C, to retain the balance of two lines only, for each of the three sections. The trust vs. bust gave a

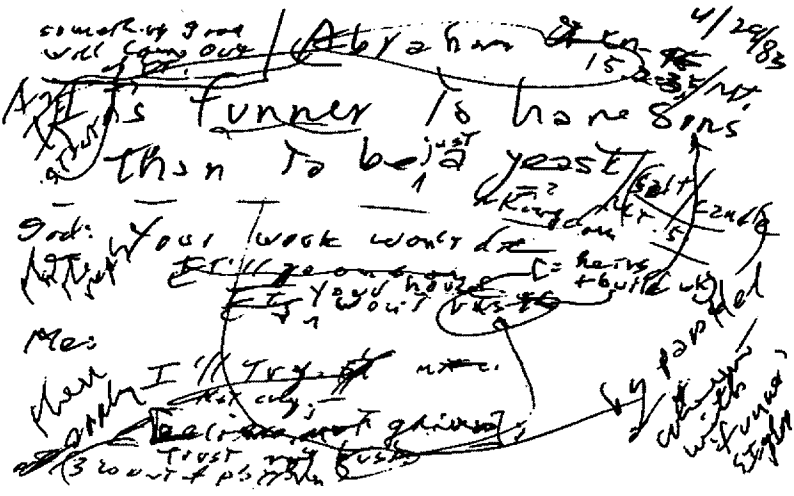


Figure 4B.

1. ((Abraham, Genesis 15.2-3, Matthew 5.13))
2. ((Something good
3. will come out
4. of it))
5. It's funner to have ~~sons~~ [heirs] (cf. Gen. 15.2-3)
6. than to be [just] ~~a yeast~~, ~~candle~~, ~~kingdom~~ ["salt"] (cf. Mt. 5.13)
7. God: ((Your work won't die))
8. ~~It'll go on and on.~~
9. ~~It~~ [Your house] won't ~~rust~~ [rot]
10. Me:
11. I'll try, ~~not~~ [but] cry.
12. ~~Believe~~, ~~not grieve~~;
13. Trust, not bust.

Figure 4C. The poem of Figure 4B, presenting some of the stages photographed in Figure 4B. Hyphens cross out deleted material; double parentheses show that some material has been moved; brackets enclose material which was inserted in the process of composition.

monosyllabic pair which was a little bit preferable--and vigorous--in my intuitive feeling, to the bisyllabic believe of Line 12 with grieve, even though both words were referentially acceptable, and phonologically tied in an internal rhyme comparable to Line 13. In addition, see the lower right corner of Figure 4B. I felt at the time of writing that bust was more coherent with the style of funner of Line 5, than was grieve; that is, the style of the poem as a whole had a deliberate inconsistency between the seriousness of God's orders and promise and acceptance, as over against the self-deprecatory style of Abraham--and me--seen in funner and bust. That is, the poem has a deliberate pattern of anti-coherence of style clashing with content, via lexical and phonological cues. The layerings are in part deducible, however, from Figure 4B which we've already given you. It should be seen, however, that problems of phonology (trust--bust), of discourse structure (the three speakers for the respective sections), lexical style, (funner and bust), segmental line differences (rhyme) are all involved here. Evidently I had a rapidly growing intuitive feeling for this style clash, as a whole, even though it appeared by bits and pieces on the original slip. It is only in looking backwards now (about 4 months later) that one sees their integration in an interlocking whole.

5. POETRY ABOUT LINGUISTICS

In Figure 5A I give a tongue-in-cheek poetic commentary on serious linguistic analysis. It suggests that classical analysis into a tree structure, by immediate constituents, can fall apart if the binary elements are not appropriate.

IMMEDIATE CONSTITUENT ANALYSIS

Hold them together
immediately.
Either they stick
or you're stuck.

Stick them in pairs
and you will look good.
Either they will
or you won't.

Figure 5A.

There is tightly-knit phonological, grammatical, and referential coherence achieved between the two stanzas. Phonologically each ends with two lines, the first of which

ends in a monosyllable with the high vowel followed by a lower monosyllable with a lower and somewhat more back vowel: stick--stuck, versus will--won't; and alliteration ties the members of each pair together: st--st, w--w. Grammatically each stanza starts with a command; and each ends with an alternative. Referentially, hold and stick, plus together and pairs, tie them together. In Figure 5B an earlier draft is given. And in each case there's referential humor in that at the last line of each stanza the analyst may be in trouble. The second line of the first stanza--immediately--gives a referential lexical tie to the title. The first word of the second stanza--stick--ties it to the first stanza.

1. ICs
2. ~~Get them quick--~~
3. Immediately.
4. Either they stick
5. or you're stuck.

6. ~~Constituents~~
7. ~~Nucleus and margin~~
8. ~~Tie them at once~~
9. ~~or~~ look ~~like a dunce~~
10. ((~~Hold~~)) ~~as~~ pairs

11. Either they will
12. or you won't.

Figure 5B. An early draft, with hyphens showing items later eliminated.

In an earlier version, there was at first a second line get them quick with a further added "together in chunks. These were both deleted, since they concealed the sharply focused balance with the second stanza. They added more lines to their first than to the second, and they did not allow the pairing of the two pairs in the first stanza with the two pairs in the second stanza in quite such close coherence. Note that in Lines 4-5, and 11-12, the phonology basic to the poem was early found, and the grammatical contrast, essential to the dynamics, was also present.

This points up the fact that the basic starting intuition drew on a wave--dynamic--component, in phonological change, a field component in the balancing of the double pairs of lines. A hierarchical component of phonology is seen in the integrated double stanza as itself a level beyond the poetic line, and the lexical repetitions exploited in particles identified for that balance.

The revisions lead to heavy elimination (of Lines 2, 6, 7, 8, 9) in order to allow the balance to show through without camouflage of irrelevant material. And scattered bits (e.g. hold in Line 10) were exploited to tie the new first story to the second, as part of a field structure of lexical set.

6. LINE CONCENTRATION.

In this section I wish to show one of my poems in which my retrospective intuition seems to see the very great concentration of line strength as over against diffuse line strength in the earlier version. It was revised in Pike (1962:140) but written after being nearly a month and a half in the rain and fog and cloud and starless skies of Europe, but seeing the stars from the window of the train near Needles, Arizona, shortly before Christmas in 1951. The sharpness of the stars --without chlorophyll interfering in the desert sky--was intense. And the timing, close to Christmas Eve, forced thought concerning Christmas Eve and the star of Bethlehem. But the principal thing which I wish to point out in this poem is the great difference, to my intuition, between the concentration of the published lines (Figure 6A) as over against more diffuseness in the first draft (Figure 6B): many simple words were omitted in the revisions; other word sequences were replaced by single words. The impact, on me, is one of great strength, born of social and grammatical "pruning". Note, for example, that only one article occurs--a, in the penultimate line.

FLAMING CANDLE

Sharp-cut lamps of night--
By strength of Mighty God
Lighted with eternal fire,
Placed in candlestick of nought,
Roaring with energy transformed--

So we would shine,
Transformed from nothing, set apart
To light worlds with Glory
Born beneath a candle
Set o'er Bethlehem's morn.

Figure 6A. Poem from Pike 1962:140, by permission of Pike, copyright holder.

FLAMING CANDLE

~~Ye~~ sharp-cut lamps of night,
Placed ~~upon the~~ [in] candlestick of nought,
By ~~big potent~~ strength of Mighty God--
~~Who lit you~~ [Lighted] with ~~a match of~~ eternal fire
~~Blown from nostrils of unrelenting power--~~
~~So distant all, and silent to our far-off ears,~~
~~But~~ Roaring with ~~a blast of~~ energy transformed...
So ~~with derived power~~ we would shine,
Transformed from nothing,
~~to be~~ set apart ~~and burn~~
~~Until~~ [To light] ~~the~~ worlds ~~before~~ [with] ~~His~~ glory ~~bow~~
[~~seen~~] ~~And hush their souls anew in~~ [~~by~~] yielded awe
~~Before the shocking beauty of a slain lamb~~
Born beneath a ~~flaming~~ candle, ~~thus~~
~~Placed~~ [Set] o'er Bethlehem~~'s one cold and~~ morn.

Figure 6B.

7. BIBLIOGRAPHICAL NOTES

Linguists for a long time have discussed poetry (e.g. Jakobson and Lotz 1952). Various scholars have discussed poets' revisions of their materials (e.g. Shapiro, in Gibson 1963:66-67) and poets have themselves sometimes discussed their own revisions; Spender (in Gibson 1963:78-81) refers, for example, to the ways some of his poems have begun, the world created by the poems, and the slow development of ideas into final poems. Ricoeur (1978:147), also, emphasizes that 'the poem creates a world.'

Special topics are also treated. Ross (1974:1) discusses special coherence in a poem such that the 'whole text is more than the sum of its parts.' Kennedy ([1966] 1979:419) discusses the 'tone of a poem' which 'may tell us how the speaker feels,' and (567) that 'rime schemes and stanza patterns can be mighty allies and valuable disturbers of the unconscious.' And Ricoeur (1978:245) says that 'it is in the heart of our imagination that we let the Event happen before we may convert our heart and tighten our will'; cf. also Kennedy (1979:411).

Hill (1976:115) (following up work of Levin) discusses problems of normal versus deviant sentences of a poet (cf. Cummings <u>He danced his did</u>), and thus negative implications for generative rules.

To contrast poetry with prose Kennedy (1979:412-13) suggests that one 'compare a poem to its paraphrase'--a technique related to 'experimental syntax' suggested in various of my publications. (See my bibliography in Eunice Pike 1981, pages 260-61, dates 1972c, 1972a-b, 1973c-d, 1976a; and page 253,

date 1977b [or second edition 1982, Chapter 1]. For references to poetry marked for vocal quality or intonation, see the same volume, page 168, dates 1970, 1971, 1974c; and page 264, dates 1967, 1977; also page 253, dates 1954-60 [second edition 1967, Section 13.5].

Some problems in determining the meaning of a poem, such that 'sometimes the total meaning of a poem evades even the poet who wrote it,' see Kennedy 1979:414. Other scholars find an even greater gulf between meaning and author (Fish (1980:172-73):

> In the old model authors are in the business of handing over ready-made or prefabricated meanings. These meanings are said to be encoded, and the code is assumed to be in the world independently of the individuals who are obliged to attach themselves to it (if they do not they run the danger of being declared deviant). In my model, however, meanings are not extracted but made and made not by encoded forms but by interpretive strategies that call poems into being...utterers...give hearers and readers the opportunity to make meaning.

My own view, as author, would disagree. I feel that I would like to say something to someone who could in part understand it even after culture change has occurred over time. I feel that we need to leave explicit room (a) for some valid communication from the original author, plus (b) room for misunderstanding or loss of meaning due to culture change, and (c) for stimulus to added thought by the reader because of his new contexts.

It is my conviction that the writer has the right to try to indicate what he thinks. This encourages me to press for markings for intonation and vocal quality in the writing of poetry, since much of what we feel is indicated linguistically by those vocal features and, therefore, the poet who wishes to write what he feels must ultimately be able to control an alphabet for those matters. (See, however, Ciardi 1959: 667-68 for a warning against hyperbole in this direction--with the insistence that the reader should 'experience' the poem rather than trying to interpret it by a prose paraphrase of what the writer was trying to say.

See, also, Kennedy (1979:419, 708) who seems to me to face this dilemma of writer's feeling (there, but perhaps unknown to him) versus the reader's need to feel for himself. In Kennedy's words:

> Again, like the tone of voice, the tone of the poem may tell us how the speaker feels about himself or herself: cocksure or humble, for example. But most of the time

> when we ask, "What is the tone of the poem?" we mean, "What attitude does the poet take toward a theme or a subject?" Is the poet being affectionate, hostile, earnest, playful, sarcastic or what? We may never be able to know, of course, the poet's personal feelings. All we need to know is how to feel when we read the poem.

And this often happens (487) when 'poetry richly affords' 'the sudden pleasure of likenesses.' So that feelings from attitudes combine with metaphor, enlarging one's insights with (567) 'rime schemes and stanza patterns' as 'mighty allies and valuable disturbers of the unconscious.' In addition (597-99), the physical form of the words on a page, in 'visual patterns,' may become part of the message--as in Figure 1, above--as 'poems for the eye.'

And--finally--Kennedy (1979:673) reinforces my interest in reporting revisions of my own poems by telling us that 'there is a certain undeniable pleasure in watching a poem go through its growth stages...we stand to learn something about the rightness of a finished poem from seeing what alternatives occurred to the poet.'

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III

PHONOLOGY

TONE IN A NON-SUBSTANTIVE THEORY OF LANGUAGE

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0. *Introduction.* Kenneth Pike (1943:78), following an earlier suggestion by Bloomfield (1933:102), proposed that the terms VOWEL and CONSONANT be reserved for characterizing the phonemic functions of sounds, and that new terms VOCOID and CONTOID be used for vowels and consonants as defined from a purely phonetic point of view.

Several years later, Pike wrote his pioneering investigation of tone languages, but then he did not make as clear a distinction between phonetic pitch and phonemic tone. He did recognize that pitch could be used for phenomena other than tone, particularly intonation (1948:13-17), but he defined tone in such a way that it had to be manifested in terms of pitch (1948:3). Apparently, he did not consider the possibility that tone might be manifested in terms of other phonetic properties.

Pike's classic definition of a TONE LANGUAGE has often been criticized in some particulars, especially in its restriction of the domain of tonal phonemes to the syllable (Welmers 1959:2). Linguistic textbooks which define TONE or TONE LANGUAGE, however, virtually always follow Pike in insisting that tone must be manifested by pitch.[1]

The present paper aims to suggest that it is no more appropriate to insist that tone always be manifested by pitch than to say that a vowel phoneme is necessarily manifested by a vocoid or that a consonant phoneme is always realized by a contoid. Examination of available facts shows that tonal functions can be manifested by various properties apart from pitch. This leads to the conclusion that pitch is doubtless the prototypical way in which tonal phenomena are manifested, but is by no means the only possibility.

1. *Redefining Tone.*

1.1 *Prototypical Tones.* The relation of traditional consonants and vowels to manifestations in terms of contoids and vocoids can profitably be viewed with the aid of the notion of PROTOTYPES.[2] Prototypically, a consonant will be manifested by a contoid, and a contoid will manifest a consonant, but if a vocoid functions in the same way as the prototypical contoid, it can still be interpreted as a consonant. Similarly, a contoid functioning in the same way as the prototypical vocoid should be treated as the manifestation of a vowel phoneme.

In the realm of suprasegmentals, we can apply the notion of prototypes and their extension to the Firthian concept of PROSODY (Palmer 1970). In its traditional use, the term PROSODY refers

to the prototypical prosody, manifested by pitch, intensity, or duration. The Firthians suggested, however, that a prosody could be manifested by properties other than these, just as long as they functioned in a way parallel to the prototypical prosodies. Thus their definition of prosody is related to the classic types of prosody in the same way that the definition of phonemic vowels and consonants is related to that of vocoids and contoids.

An examination of the functions of prototypical tones--the pitch-manifested tonal phonemes of various Far Eastern, African, and Meso-American Indian languages--can be used as the basis for preparing a new functionally-based definition of tone. Any phonetic property functioning in the same way as the pitch of these prototypical tone languages can be interpreted as a phonemic tone. As it turns out, many, though far from all, of the Firthian prosodies will be tones.

1.2 *Tonal Qualities.* The term TONAL QUALITY can be used to refer to any phonetic phenomenon which is capable of manifesting a tone. A listing and further discussion of such properties is presented in section 2. The point to be made here is that a tonal quality will not necessarily always manifest a tonal phoneme wherever it occurs. This is certainly well known with respect to pitch, the prototypical tonal manifestation.

Most observers, like Pike as mentioned above, have recognized that we need to distinguish tone from intonation even though both are commonly manifested in phonetically similar ways. In addition, a distinction should be made between tone and TONAL ACCENT (Cf. further Lockwood 1983). In tonal accent, tonal qualities show contrast only on the accented syllable of a phonological word, and contrasts of accent placement combine with two or more distinct qualities associated with the accented syllable. Such a system, found in such languages as Swedish (Haugen 1976:73-74), Punjabi (Shackle 1972:13-16), and North Pame (Gibson 1956:258-60) can most profitably be viewed as a type of accent system in which qualitative contrasts occur in addition to the accent-placement distinctions generally found in systems of phonemic accent.[3]

1.3 *The Proposed Definition.* Tone can be defined according to three essential functional characteristics:

(1) it is prosodic in that it operates over a domain comprising more than a single segment;
(2) it lacks the culminative function of marking one prominent syllable per phonological word (or other pertinent domain) which we find with accent;
(3) it has a domain no greater than one phonological word.

The first characteristic distinguishes tone only from the purely segmental phonemes, and not from other kinds of suprasegmentals. The second distinguishes it from the various accentual phenomena (Lockwood 1983), and the third sets it off from intonation, which has a domain greater than a single phonological word. It should be noted that all these characteristics are formal rather than substantive: they are based on function in the form of language, not on phonetic manifestation.

1.4 *Consequences of the Definition.* This definition has the consequence of excluding at least a few phenomena which have been termed tone by some investigators. More importantly, it includes under tone several phenomena not usually treated under that rubric. The exclusions can be briefly listed: (1) systemicists such as Halliday (1967) and Crystal (1969) use the term TONE for the intonation contours of such languages as English; (2) tonal accent and sometimes even pitch-manifested simple accent have been termed tone by some writers (e.g. Schadeberg 1973, Voorhoeve 1973). Details of the phenomena included will be surveyed in section 2.

2. *Phonetic Manifestations of Phonological Tone.* Table I summarizes eight kinds of phonetic qualities which are capable of manifesting phonemic tone, exemplifying the notion of tonal qualities as discussed in section 1.2. These qualities will occur, either singly or in combination with others, to manifest tonal phonemes. The table associates each quality with the names of several languages which can be interpreted in terms of one or more tonal phonemes manifested (at least in part) by that quality.

Table I. *Qualities Used in the Manifestation of Tonal Phonemes*

Quality	Examples[4]
PITCH HEIGHT	Mixtec, Loma, Kikuyu
PITCH DIRECTION	Thai, Vietnamese
SUBORAL QUALITIES	Arabic, Igbo, Kasem
DURATION	Estonian, Burmese
INTENSITY	Waffa, Campa
PALATALIZATION	Kirgiz, Finnish
LABIALIZATION	Turkish, Hungarian
NASALIZATION	Desano, Terena

The first two of these qualities, PITCH HEIGHT and PITCH DIRECTION, are the two most intimately associated with tone in its classical definition. The use of pitch height characterizes Pike's REGISTER TONES (1948:5), while pitch direction is seen in his CONTOUR TONES (1948:8-9).

Classical discussions often refer to the next two properties, SUBORAL QUALITIES and DURATION as subsidiary characteristics accompanying pitch, but each is capable of manifesting tone as its sole, or at least principal characteristic. The term SUBORAL QUALITIES is intended to include such properties as laryngealization, pharyingealization, and glottal interruption. Under pharyngealization we can understand both the quality found in the 'emphatic' stretches of some kinds of Arabic and that found in vowel harmony systems based on the advancement or retraction of the tongue root, as in various West African languages. An example of the use of duration in manifesting tone is given in the discussion of Estonian in section 4.

INTENSITY is, of course, prototypically associated with accent. In some languages, however, this property has been found in a distribution characteristic of tone rather than accent. Members of the Summer Institute of Linguistics, who have discovered and written on several such systems, have termed it rather MULTIPLE STRESS, but this classification is based on its phonetic rather than its phonological properties. Functionally it is a tone, and only an *a priori* assumption restricting the manifestation of tonal phonemes to pitch justifies their classification (as presented in E. Pike 1974, for example).

PALATALIZATION and LABIALIZATION are especially associated with systems of vowel harmony, as in various Uralic and Altaic languages. At the rank of syllable, palatalization also functions as a tone in some ancient Slavic languages such as Old Russian.

Finally, NASALIZATION is known to function in a manner comparable to vowel harmony, and thus tonally, in various languages, especially various ones spoken in Latin America.

3. *Towards a Functional Typology of Tone Systems.* Previous typologies of tone have focused primarily on the facts of phonetic realization rather than on linguistic structure. A good example is the first chapter of Pike 1948. The approach found there is certainly useful, and it could be extended given the additional properties by which functional tones can be manifested. If one assumes that language is a form, however, the primary typology ought to be based on the facts of language structure proper, rather than upon the substance which serves to manifest it. Such an approach is relatively unexplored. The following observations indicate how this matter might profitably be approached. Examination of more data is needed before a more complete typological survey on this basis can be achieved.

The first structurally relevant dimension to examine is NUMBER OF TONE SYSTEMS. Table II shows a three-way classification with the terms ATONOSYSTEMIC, MONOTONOSYSTEMIC, and POLYTONOSYSTEMIC, with examples of each. A member of the latter group will have more than one simultaneously functioning system fitting the definition of tone. Igbo, for example, has a classical tone system of three pitch levels, together with a vowel harmony system based on tongue root position.

Table II. *Number of Tone Systems as a Typological Parameter.*

ATONOSYSTEMIC	MONOTONOSYSTEMIC	POLYTONOSYSTEMIC
English	Thai	Igbo
Swedish	Kikuyu	Turkish
Modern Russian	Old Russian	Finnish

Another important matter to consider for each tone system is its DOMAIN.[5] Table III displays a classification into four possible domains based on material observed to date: MORA, SYLLABLE, STRETCH, and WORD. The first two of these terms are used in

Table III. *Domain of a Tone System.*

MORA	SYLLABLE	STRETCH	WORD
Hausa	Latvian	Turkish	Tamang
Mixtec	Shona	Desano	Estonian

their usual senses, while WORD refers to the PHONOLOGICAL WORD, whose precise definition can vary from language to language, and which does not necessarily coincide with the grammatical word. The term STRETCH is proposed for a sequence encompassing more than a syllable but less than a whole phonological word. In some languages with vowel harmony, for example, the domain of this system may not include all of every phonological word.

Further investigation of tonal systems will be needed before this classification can be extended. For example, the coexistence of systems of different types in polytonosystemic languages should be examined to determine the upper limit on how many such systems can coexist, and how such coexistence relates to matters of domain and phonetic manifestation. In the polytonosystemic examples in Table III, for instance, the coexistent systems differ in either domain or phonetic manifestation, or both. Is this always true?

4. *Exemplification: The Standard Languages of the Baltic States.*

The classification set forth above will be briefly exemplified by being applied to the three standard languages of the Baltic States: Lithuanian, Latvian, and Estonian. Traditional classifications treat Lithuanian and Latvian as tonal, and Estonian as atonal. According to the new proposal, this traditional treatment is correct only for Latvian.

Lithuanian does not have true tone, and it need not even be interpreted as having tonal accent, even though pitch-based contrasts can be observed on some of its accented syllables. These contrasts involve a rising vs. falling pitch on accented syllables with two moras. Other syllables can be accented, but show no pitch distinctions. These facts can be treated efficiently with a simple accent phoneme placed on the first mora for a falling accent, and on the second for rising. Some examples of the application of this system are given in Table IV.

Table IV. *Lithuanian Pitch Contrasts Treated as Simple Accent.*

ORTHOGRAPHY	PHONEMIC TRANSCRIPTION	PHONETIC TRANSCRIPTION	GLOSS
áušti	/áušti/	[ˈáùšʸtʸi]	GROW COLD
aũšti	/aúšti/	[ˈàúšʸtʸi]	DAWN
pùlsas	/púlsas/	[ˈpúlsas]	PULSE
pulkas	/pulkas/	[ˈpùlkas]	REGIMENT
kártis	/kártis/	[ˈkártʸis]	POLE
kařtis	/kařtis/	[ˈkàřtʸis]	BITTERNESS

Sources: Comrie 1981:149; Dambriūnas et al 1966:10.

Latvian has a type of SYLLABLE TONE in which contrasts are restricted to heavy syllables. Here the phenomenon is not related to accent (in contrast to the Lithuanian situation), since that is automatically initial, whereas a heavy syllable in any position can show pitch contrasts, and such syllables can occur more than once, just once, or not at all in a phonological word. Examples are presented in Table V, where the level tone is treated as unmarked, and the grave accent is used for the falling tone, and the circumflex for the interrupted tone (realized with laryngealization of the second mora).

Table V. *Latvian Tone--Restricted to Heavy Syllables*

ORTHOGRAPHY	PHONEMIC TRANSCRIPTION	PHONETIC TRANSCRIPTION	GLOSS
liêls	/lîels/	[ˈlie̯ls]	SHIN
liẽls	/liels/	[ˈlīels]	BIG
làuks	/làuks/	[ˈláùks]	BLAZED
laũks	/lauks/	[ˈlāuks]	FIELD
tê̂v	/tæ̂·f/	[ˈtææ̯f]	O FATHER!
tè̄vs	/tæ̀·fs/	[ˈtǽæ̀fs]	FATHER

Source: Endzelīns 1971:26-27.

Since it lacks pitch contrasts apart from intonation, Estonian has traditionally been regarded as atonal. The unusual third degree of length reported for this language, however, can be interpreted as a type of WORD TONE. The contrast of long and extra-long syllables is limited to the first syllable, and it occurs in a manner whose placement with regard to the affected sounds is predictable given the presence of extra length in the word. In terms of economy, the suprasegmental solution makes much more sense than the recognition of three different varieties for nearly every vowel and consonant phoneme, as is sometimes done.[6] Some examples are presented in Table VI.

Table VI. *Word Tone Contrasts Realized by Duration in Estonian.*

ORTHOGRAPHY	PHONEMIC TRANSCRIPTION	PHONETIC TRANSCRIPTION*	GLOSS
lina	/lina/	[ˈlina]	FLAX
linna	/linna/	[ˈlin·a]	OF A TOWN
linna	/^linna/	[ˈlin:a]	TO A TOWN
koli	/koli/	[ˈkoli]	RUBBISH
kooli	/kooli/	[ˈko·li]	OF SCHOOL
kooli	/^kooli/	[ˈko:li]	TO SCHOOL

*The symbol [˙] indicates a long segment, while [:] is used for an extra-long segment.

Source: Comrie 1981:116.

5. *Concluding Remarks.* It must be admitted that the proposed redefinition of tone presents terminological difficulties. The notion of tone in linguistics has been restricted to pitch-manifested phenomena for so long that it will doubtless be impossible to find wide acceptance of the proposed new usage. In view of this, it is proposed that the term FUNCTIONAL TONE be used for this new sense, while the older type of pitch-manifested tone be called CLASSICAL TONE. This proposal is modeled on such terms as CLASSICAL PHONEME, SYSTEMATIC PHONEME, and STRATIFICATIONAL PHONEME, which came to be used for different senses of the formerly unitary PHONEME. The author would be glad to consider further alternative suggestions.

NOTES

1 To cite just two of the many examples that could be given: '*Tone* is variation in pitch. In many languages--called *tone languages*--a higher or lower pitch on a vowel can make each one count for more than one.' (Bolinger 1975:45); 'Languages that use the pitch of *individual syllables* to contrast meanings are called TONE LANGUAGES.' (Fromkin and Rodman 1983:93).

2 The term is used in psychology by such writers as Rosch (1973) and in linguistics by Fillmore (1976).

3 Tonal accent as understood here must be distinguished from three other situations with which it could potentially be confused: (1) simple accent manifested in terms of pitch, as in Japanese and such African languages as Kinga (Schadeberg 1973) and Safwa (Voorhoeve 1973); (2) the cooccurrence of tone and accent in the same languages; and (3) the occurrence of tonal contrasts on a phonetically accented syllable when the accent placement is phonologically predictable.

4 The following references are given for those languages listed which are not well-known: CAMPA--K. Pike and Kindberg 1956; DESANO--Kaye 1971; IGBO--Welmers 1973:33-4, 84; KASEM--Callow 1965; KIRGIZ--Comrie 1981:59-61; LOMA--Gleason 1961:284; MIXTEC--K. Pike 1948:77-94 and passim; TERENA--Bendor-Samuel 1960; WAFFA--Stringer and Hotz 1971.

5 The notion of word tone has been considered by others, cf. especially Hyman 1975:214-216.

6 Cf. the inventory of alleged phonemes presented for Estonian in Ruhlen 1975:192. On the other hand, the analysis of Harms 1962 and the practical transcription used in Oinas 1966 both anticipate the present word-tone analysis to a degree by using accent marks. In fact, though he does not present a full analysis, Jakobson included Estonian among those possessing 'musical correlations' as early as 1929 (Jakobson 1929:67-68).

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IMPLICATIONAL PHONOLOGY: MARTINET, FOLEY, AND BEYOND

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Lately, a number of linguists have shown interest in the theoretical concept of strength hierarchies as a principled means of accounting for phonological changes or allophonic alternations that traditional analyses can only catalogue.[1]

Due to their common occurrence and relatively straightforward developments, two types of change are especially appealing subjects of analysis in the early stages of elaboration of an implicational approach: a) apparently linked changes within a series (e.g. degemination of all /pp,tt,kk/, voicing of all /p,t,k/, and spirantization or loss of all /b,d,g/), and b) weakening or strengthening of one order preferentially to another (e.g. voicing of /k/, but not of /t/ or /p/ in intervocalic position). In this study, changes of the first type are analyzed with the principles of the two best known hierarchical approaches: Martinet's chain effects (1955), and Foley's abstract implicational hierarchies (1977). It will be seen that both of these approaches fail to account for the relevant changes satisfactorily. Instead, a phonetic-based hierarchical phonology is proposed as a possibly interesting direction of approach to better understanding of language change.

The Romance languages show essentially two types of rephonemicization of intervocalic voiceless consonantism:

1. Degemination of voiceless geminates and voicing of single surds, of which Spanish is an example.
   Lat. BUCCA > Sp. /boka/
   Lat. AMICA > Sp. /amiga/
2. Degemination of voiceless geminates and no change in single voiceless stops, of which Rumanian is an example.
   Lat. BUCCA > Rum. /buka/
   Lat. AMICA > Rum. /amika/

Both types present difficulties in the theoretical frameworks of Martinet and Foley.

In his well known comparison of Celtic and Romance weakenings, André Martinet proposed that the developments of the Spanish type, which characterize Western Romance, were the result of a push-chain effect instigated by degemination. In order to avoid merger of the weakened reflex of /kk/ with /k/, the single surd would have voiced; this in turn would have forced weakening of the original voiced stops, thus a classic push chain:

kk → k
k → g
g → g/∅

Though neat, the solution for the Romance data is unsatisfactory. Some original voiced stops have been lost altogether in Spanish; others have not, however, and have merged with both the voiced reflexes of original voiceless stops and the simplified reflexes of original voiced geminates:

APICULA	> /abexa/	'bee'
ABBATT(U)ERE	> /abatir/	'knock down'
CABALLU	> /kabaʎo/	'horse'

In the Rumanian examples already seen, degemination has had no push effect on the voiceless single stops:

	/kk/ > /k/	BUCCA	bucă	'mouth'
and yet	/k/ > /k/	AMICA	amică	'friend (f.)'

Martinet's chain effect fails to account for the Rumanian results in that degemination in his approach would necessarily force voicing -- or conceivably another form of weakening such as spirantization -- of the single voiceless stops, but the non-change of AMICA to amică is the norm here, as is the degemination of BUCCA to bucă. Martinet's theory also counterpredicts the merger of the reflexes of APICULA, ABBATT(U)ERE, and CABALLU; if phonemic distinction is to be preserved, the three types should have developed in three different ways, yet original /p/, /b/, and /bb/ all result in modern /b/.

The problem apparently stems from the a priori assumption that systematic phonological changes are subject to functional control. That phonological systems should be responsive to the threat of phonemic mergers is perhaps an intuitively appealing notion. But given the teleological power sometimes assigned to the need to avoid wholesale merger, it is surprisingly difficult to find an instance in which systematic merger avoidance must have been the instigator of phonological change (I am aware of no solid examples). In contrast, it is not at all difficult to find mergers. French [swa] is the subjunctive of être (soit), 'silk' (soie), or 'oneself' (soi), and these are by no means the only examples of serial homonymity in French. Spanish also has numerous cases of merger, so that in the Americas, [r:asa] is 'race, people' (raza) and 'clear of obstructions' (rasa), [kasa] is both 'house' (casa) and 'hunting' (caza), [ser:ar] is 'to close, shut' (cerrar) and 'to saw' (serrar); the list could be continued. Finally, William Labov reported in a recent talk at the University of Illinois at Urbana that in northern New Jersey, loss of the final obstruent in can't has led to considerable confusion; native speakers very often have to ask "Did you say c-a-n or c-a-n-t?". A clearer case of need to avoid merger would be hard to find, yet the perils of merger did not block the systematic loss of -t, nor did they trigger a therapeutic change of another sort to preserve the distinction, such as diphthongization of one of the vowels. Though the drag or pull chain might well describe specific

instances of change in individual languages, its central principle at the theoretical level — that merger avoidance can trigger systematic mutation — does not hold as an explanatory or descriptive universal.

More recently, James Foley (1977) has elaborated theoretical principles to account for the sorts of changes we have seen in Spanish. According to Foley, there exist a number of universal parameters of abstract phonological strength relationships which govern possible weakening and strengthening strategies in any language. The phonological units of the abstract hierarchies have no phonetic value in themselves, but rather are manifested variously in different languages. The strength relationships which hold in any language are discoverable by consideration of the language-specific results of weakening and strengthening processes. To illustrate for just one order, let us suppose that a language is examined in which the following diachronic changes have occurred:

pp	>	pp	/appa/	>	/appa/
p	>	b	/apa/	>	/aba/
b	>	∅	/aba/	>	/a:/

Given the assumption that intervocalic environment is a typical weakening position (Foley 1977:109), comparison of the changes serves to establish the language specific manifestations of the abstract strength units in this language. The voiceless geminate has undergone no change at all, and is thus phonologically stronger than either of the single stops, both of which have weakened. If it is assumed that complete loss is a greater weakening than sonorization (p > b vs. a possible b > b̲ and then ∅), p is then shown to be stronger than b. Thus on the abstract hierarchy which describes relationships among members of an order (where ↑ points to increasing strength),

	↑ B3
B parameter	B2
	B1

the results in this language would map something like this:

	3	↑ pp
	2	p
B	1	b

Foley's principles serve not only to define the weakening and strengthening relationships which are discoverable, but also to predict which changes can take place if further development occurs. At the heart of Foley's theory is the inertial development principle (Foley 1977:107), the relevant part of which here is:

> Weak elements weaken first and most extensively and preferentially in weak environments.

In the language seen here, then, the theory predicts that there can be no weakening of, say, appa to aba without a prior or concomitant further weakening of aba. Single b is weaker than pp, and thus must weaken preferentially.

If these principles are applied to examination of the Romance data considered here, Spanish appears to conform nicely to the predictions, but Rumanian raises a serious problem for the theory.

In the Spanish case, principles of diachronic phonology outside Foley's framework would lead us to believe that degemination occurred after intervocalic voicing was phonemicized. The two rules were apparently historically ordered so that AMICA > amiga, but BUCCA > boca, i.e. the single reflex of degemination did not voice along with original /k/. This establishes /kk/ as stronger than /k/, and would appear to agree with Foley's principles (as well as deny Martinet's claim that degemination was the catalyst of Western Romance weakening). In Rumanian, though, there is preservation of /k/ in AMICA > amică, but degemination in BUCCA > bucă, not at all what would be expected if geminates were stronger than single stops. Here, the inertial development principle would lead to the conclusion that original /kk/ must be interpreted as weaker than original /k/, since the first has undergone what appears to be a one-unit shift, kk → k, while the second has resisted change altogether, k → k. Aside from the fact that this is an intuitively displeasing strength relationship -- an opinion which in any case Foley might say was due to conflation of phonetic strength and phonological strength -- if the change kk → k is a weakening, the k resulting from weakening must necessarily be weaker than the geminate whence it derives, thus at any stage in the language, /k/ is weaker than /kk/. The Rumanian change is necessarily a violation of the inertial development principle, and thus a negation of its validity.

This impasse is the result of a crucial flaw in Foley's theoretical apparatus. Foley says that his is an attempt to understand and explain phonological processes, not describe phonetic processes. He claims that his theory has a scientific structure, with abstract elements, and coherent principles which govern the behavior of these elements. The abstract elements in turn have no universal phonetic value, but rather have varying phonetic manifestations which are language specific. In his fervor to divorce phonological strength units in the abstract from any necessary phonetic description, however, he has banned any sort of phonetic consideration at all points in the discovery and description procedures of language specific analysis as well. This refusal to admit phonetic evidence as either a heuristic tool or a controlling principle undermines coherent application of the theory, not because the abstract phonological elements do not have universal phonetic manifestations -- in fact, this is a positive point -- but because complete dismissal of superficial phonetic considerations precludes principled discovery of change or alternation. With no phonetic evidence at all, how do we know

that spirantization of [g] to [g], for example, is a weakening? In fact, how is it possible to even consider a change [g] to [g] if there can be no phonetic description of the elements under analysis? With no phonetic evidence, it is impossible to establish that a weakening has taken place, thus it is impossible to discover the language-specific manifestations of the abstract strength-related phonological units. This describes Foley's paradox:

> Phonetic considerations at any level are banned from the theory, yet the theory cannot function without phonetic considerations.

The theoretical dead end of Foley's paradox is not inherent to his strength theory, however. Admission of phonetic evidence in the procedure for discovering language-specific manifestations of weakening and strengthening would in no way compromise the integrity of the abstract universal phonological elements; their phonetic manifestations would still be language-specific, and would still be explicable at the theoretical level as the result of the interaction of abstract implicational hierarchies of strength relationships. Inclusion of the phonetic element enables a principled elucidation of the Rumanian case seen here.

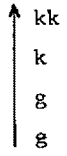
Following from the work of Toby Griffen (cf. "Dynamic phonology and the Indo-European sound shift" in this volume, and especially Griffen 1976 for a clear statement of principles), consonant weakening in intervocalic position might be characterized as extension of vocalic quality into the temporal, acoustic, and articulatory space of the consonant obstruction. The most basic forms of this are intrusion of vocalic sonority ([aka]→[aga]) and intrusion of vocalic aperture ([aka]→[aha]); the two can also combine ([aka] → [aga]). This provides a simple means of identifying the Spanish development of AMICA > [amiga] (and eventually [amiga]); if weakening is defined as movement towards greater vocality, the Spanish chain is first an intrusion of vocalic sonority, and in its most usual spoken form today, [amiga], an additional incipient intrusion of aperture.

Introduction of phonetic evidence also allows interpretation of degemination. Though syllabification is notoriously difficult to establish absolutely, if modern Italian geminates can be taken to be essentially the same as Latin geminates, there is a considerable amount of circumstantial evidence that the [kk] of Latin BUCCA (as in modern Italian bocca) was a bisyllabic homorganic cluster (cf. Hall 1971:32-34 and Tekavčić 1972:130-31). Thus a change from Latin BUCCA [buk$ka] to Rumanian [bu$ka] is not essentially an intervocalic change in the sense of Spanish [amiga] from AMICA [amika], where the skeletal structure of the word has remained the same, but a syllabic restructuring, in effect a syllable boundary shift (Hock 1975), from closed to open syllable. In the initial stage, [buk$ka], there is no possibility of direct vocalic intrusion of either member of the cluster from both directions as there is in [amika], since neither of

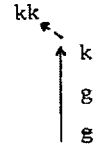
the clustered stops is intervocalic.

If this description is acceptable, it becomes apparent why Foley's theory fails to account for the Rumanian data coherently. Intervocalic weakening of single stops is one phonological process, primarily vowel intrusion, while degemination is another, primarily syllabic restructuring. To understand the phonological processes involved, which is Foley's stated goal, it is necessary to understand the phonetic evidence which shows that the two are distinct. Geminates, then, do not properly belong on the same strength parameter as single stops, as Foley would have it, but rather are members of a separate network of cluster relationships with a feeding link to the single stops.

Thus not:



but instead:



(with the spirant included for modern Spanish)

Without the understanding that phonetic consideration can bring, Rumanian <u>bucă</u> from BUCCA but <u>amică</u> from AMICA was inexplicable in Foleyan terms, and in fact violated the inertial development principle, the <u>primum mobile</u> of Foley's theory. With phonetic understanding, however, it is apparent that degemination and single stop weakening are two distinct phenomena, and that though one can feed the other, the actuation of one does not imply actuation of the other. This follows from Foley's principles of closure, which assume that rule applications are parameter specific. Since the phenomena of degemination and single stop weakening are manifestations of mutation on clearly defined separate parameters, the Rumanian outcomes are interpretable as not violating the inertial development principle after all if phonetic evidence is considered: BUCCA > <u>bucă</u> is a syllabic restructuring initiated on the cluster parameter, and though the result is a unit positioned on the single stop parameter, the rule at the time of actuation applies to a distinct strength scale and is in no way obliged to affect single stops as well.

The changes of voiceless consonants seen in Spanish, BUCCA > <u>boca</u> and AMICA > <u>amiga</u>, which both Martinet and Foley must claim are necessarily linked, are coincidental applications of two distinct weakening strategies, then. The syllabic restructuring which has affected the original geminates in Rumanian has also occurred in Spanish (as well as the rest of Western Romance, to include Catalan, Portuguese, French, Provençal, etc.). Voicing of single surds, which the Rumanian evidence considered in light of phonetically responsible strength hierarchies shows is not a necessary accompaniment of degemination, is a separate development, unrelated in its incipience to the phenomenon of syllabic restructuring.

The developments of Spanish and Rumanian intervocalic surds, which have puzzled most Romanists who have tried to compare them, are seen to be unremarkable cases of unlinked weakenings on distinct implicational strength parameters.[2] The resolution of this problem in elementary form here demonstrates the promise of further elaboration of implicational strength hierarchy theory rooted in a solid phonetic base.

NOTES

1. Among those who have pursued strength hierarchies as an explanatory or descriptive tool are Escure (1975), Hooper (1976), Hock (1975), Lass and Anderson (1975), Savoia (1980), Vennemann and Ladefoged (1973) and Zwicky (1972), in addition to Foley and Martinet mentioned here.

2. Prime among those not puzzled by the two distinct developments is Hall (1975). See, however, the response in Bichakjian (1977) for a typical interpretation, resorting to language external phenomena of questionable motivation.

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TWO PROBLEMS IN DISTINCTIVE FEATURE ANALYSIS

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Phonological distinctive feature, or df, analysis of the Praguian or functional-structural variety is a delicate procedure. In this type of analysis, the *a priori* definition of dfs as linguistic universals is avoided, on the grounds that different languages show great variation in their phonic distinctive properties. This means that the analyst must decide which phonetic features of the phoneme realizations in any given language are to be selected as distinctive and which are to be considered automatic accompaniments of the dfs. The basic principle is that a phonetic feature of the realization of a phoneme is phonologically distinctive only if it serves to differentiate its realizations from those of other phonemes. For example, /č/ in English is distinctively /occlusive/ by opposition to /š/, but /k/ is not distinctively /occlusive/ because there is no /x/ to oppose it (see below the chart of the English consonant system).

This principle sounds simple enough, and certainly works well in the above example. However, it is too vague to handle various less obvious questions which arise in many analyses. One problem which has been discussed in some detail in the literature is what to do when the realizations of two phonemes are distinguished by several obvious phonetic features. A notorious example is the problem of so-called "voicing distinctions" (see the detailed discussion in Trubetzkoy 1969, pp. 144-60); another is the question of whether or not the phonetic difference [occlusive] vs. [fricative] is to be considered distinctive in Modern French (Trubetzkoy 1969, pp. 126-7; Dorfman 1968, pp. 97-8). These questions have not been resolved; in fact it may be doubted whether one can reasonably expect the development of criteria which are sufficiently powerful to permit the resolution of all such debates. In the present discussion, I wish to focus on two problems of a more specific nature, which to my knowledge have not been explicitly examined within the traditional functional-structural or Praguian frameworks.

First, may a df be postulated in any case where it can be shown to account for a minimal opposition? In McCalla (1983), I propose the following df analysis for the Modern English consonants (/h/, /r/, and /l/ are excluded here):

		labial	apical	frontal		dorsal
				hissing	hushing	
occlusive	voiceless	p	t		č	k
	voiced non-nasal	b	d		ǧ	g
fricative	voiceless	f	θ	s	š	
	voiced	v	ð	z	ž	
nasal		m	n			ŋ

One of the most striking features of this analysis is the grouping of /s/ and /z/ on the one hand, and /č/, /ǧ/, /š/, and /ž/ on the other into a single /frontal/ order. The difference between the two groups of /frontal/ phonemes is then accounted for by the df /hissing/ for /s/ and /z/ vs. /hushing/ for /š/ and /ž/ (/č/ and /ǧ/ are not distinctively /hushing/ since there is no /ć/ or /ź/). The major reason for postulating this analysis is that, dynamically, the English consonant system seems to show four orders rather than five (the latter as in the following analysis):

		labial	apical	hissing	hushing	dorsal
occlusive	voiceless	p	t		č	k
	voiced non-nasal	b	d		ǧ	g
fricative	voiceless	f	θ	s	š	
	voiced	v	ð	z	ž	
nasal		m	n			ŋ

This analysis is rejected because two gaps in the nasal series do not have very much dynamic reality in current English. One gap (for a /frontal nasal/ /ɲ/, as in the four-order analysis), on the other hand, is both structurally reasonable (/ɲ/ could occur in English without producing any structural anomaly in the system) and realistic in current English since [ɲ] occurs as the realization of the archiphoneme of the phonemes /m/, /n/, and /ŋ/ before /č/ and /ǧ/ (as in *finch* and *binge*). Since I consider that one of the purposes of this type of df analysis is to reflect and reveal dynamic tendencies in any phonological system, I feel that

the four-order analysis is better than the five-order one. (Obviously I cannot discuss this concept of df analysis in detail here: see McCalla 1983, 1984.)

The point which is relevant to the topic of the present study is that the acceptance of the four-order analysis implies the answer "yes" to the question posed above. The dfs of the /frontal/ phonemes may be listed as follows:

/s/ - /frontal/ vs. /f, θ/, /hissing/ vs. /š/, /voiceless/ vs. /z/
/z/ - /frontal/ vs. /v, ð/, /hissing/ vs. /ž/, /voiced vs. /s/
/č/ - /frontal/ vs. /p, t, k/, /occlusive/ vs. /š/, /voiceless/ vs. /ǧ/
/ǧ/ - /frontal/ vs. /b, d, g/, /occlusive/ vs. /ž/, /voiced/ vs. /č/
/š/ - /frontal/ vs. /f, θ/, /hushing/ vs. /s/, /fricative/ vs. /č/, /voiceless/ vs. /ž/
/ž/ - /frontal/ vs. /v, ð/, /hushing/ vs. /z/, /fricative/ vs. /ǧ/, /voiced/ vs. /š/

Thus, the feature /frontal/ is shown to be distinctive by the minimal oppositions given. Another way of approaching this problem would be to say that the phonetic feature [frontal] is redundant, since all /hissing/ and /hushing/ phonemes are [frontal] and no others are. But if this solution - which implies answering "no" to the question under discussion - is adopted, one must consider the system to involve five orders.

In my opinion, this example reveals the desirability of setting up descriptive procedures which have considerable flexibility. The theoretical statement "a df may be postulated in any case where it can be shown to account for a minimal opposition" permits such flexibility in a way in which the rival "a phonetic feature of a phoneme realization is distinctive only where it cannot be predicted from the other dfs of the phoneme" does not. The latter is too absolute to be appropriate as an element of a theory concerning something as complex as natural language. Note that the first formulation fulfills the requirements of a proper theoretical statement: it can be easily applied to any given description (that is, it is not vague). Note further that it is a *phonological* statement: it does not open the way to conflicts over infinite phonetic detail because it is based on the postulation of minimal *oppositions*.

The second problem concerns the relation between dfs and realizations. May the df list for a phoneme be considered complete even when the list could describe, on the phonetic level, another phoneme of the system? The above analysis of the English /frontal/ consonants provides an example. The phonemes /š/ and /ž/ are the only ones which are distinctively /hushing/; /č/ and

/ǧ/ are redundantly [hushing]. Is then /fricative/ to be considered distinctive for /š/ and /ž/, or should it be considered redundant on the grounds that all phonemes with the df /hushing/ are [fricative]? The matter can be made clearer by explicitly writing the realization or *redundancy* rule involved (that is the rule which provides the major redundant features for one or more phonemes beginning with the list of their dfs): "all /hushing/ phonemes are [fricative]". One possibility is to accept that this is a valid redundancy rule. This is equivalent to replying "yes" to the question above, and would result in the fricativity of /š/ and /ž/ being considered redundant. The other possibility is to refuse to accept such a rule since it is *phonetically* incorrect: /č/ and /ǧ/ also are [hushing]. I prefer the second solution since it respects the phonetics of the situation better than the first one does; after all, this method of df analysis is based on the assumption that dfs are best described in terms of the *phonetic* features of their realizations, which means that phonetic factors are considered to be of great importance. To ensure that phonetically valid solutions are arrived at in all pertinent descriptive instances, the theory would include the statement "redundancy rules must be phonetically as well as phonologically correct".

Another example from the English system: the phonemes /b/, /d/, and /g/ are shown on the chart as being distinctively /non-nasal/. If this df is omitted, one would have to include the following redundancy rule in the description: "all /voiced occlusive/ phonemes are [non-nasal]". This rule is phonetically incorrect, since the /nasal/ phonemes /m/, /n/, and /ŋ/ are also [voiced] and [occlusive]. Thus the principle arrived at above requires that /non-nasal/ be considered a df for /b/, /d/, and /g/. By contrast, neither the /voiceless occlusive/ nor the /fricative/ phonemes are distinctively /non-nasal/, since the redundancy rules "all /voiceless/ phonemes are [non-nasal]" and "all /fricative/ phonemes are [non-nasal]" are phonetically valid.

As I indicated above, these two principles have not, to my knowledge, been explicitly formulated within any functional theory. However, it is not difficult to find descriptions which implicitly assume them. An example is the following description of the Korean consonants provided by Tcheu (1967):

	anterior	central			posterior
		occlusive	fricative	affricate	
lenis	p	t	s	c	k
fortis	p^o	t^o	s^o	c^o	k^o
aspirated	p^h	t^h		c^h	k^h
nasal	m	n			ŋ

The postulation of /central/ as a df in this system implies the same decisions I have made in the current study. The feature [central] could be predicted by a rule of the form "all /occlusive/, /fricative/, and /affricate/ phonemes are [central]". The /occlusive/ part of this rule is phonetically untrue, since not all [occlusive] sounds are [central]: the /anterior/ and /posterior/ phonemes are also [occlusive] phonetically. Hence the df /central/ as applied to the phonemes /t, t^o, t^h/ implies that the df list for a phoneme is *not* considered complete when the list could phonetically describe another phoneme. The /fricative/ and /affricate/ portions of the proposed redundancy rule are phonetically correct, so the decision to consider /central/ to be a df of the phonemes /s, s^o, c, c^o, c^h/ implies that a df *may* be postulated in any case where it can be shown to account for a minimal opposition. Tcheu demonstrates how his analysis takes far better account of the rather complex neutralization patterns in the Korean consonant system than does a more traditional analysis into five separate orders. Tcheu's solution would not be possible if the questions posed in the current study were answered differently.

To conclude, I would like to briefly consider some of the general implications of the two theoretical principles proposed here. The first principle stems from a conviction that linguistic analytical procedures must involve some flexibility in order to be *appropriate*. This is because language structures and functioning are immensely complex, and cannot reasonably be described using a fixed, rigid set of rules or the equivalent. Thus, while the theoretical principles which inspire various types of linguistic analysis should be clear and applicable (this is a general scientific principle), I do not feel that it is appropriate to require that they exclude the possibility of different, equally "adequate" analyses of the same data, the assertion that certain items in the description are marginal with respect to particular analytical criteria, etc. The examples discussed in the present paper show how flexibility in df analytical procedures permits the analyst to take account of dynamic factors and neutralization patterns. In other instances it permits other aspects of language structure to be more adequately represented than they can be within rigid theoretical frameworks.

The second theoretical principle stems from the conviction that linguistic analysis should reflect as closely as possible the physical features of the acoustic signal and the manners in which it is produced and perceived. It must be emphasized that this notion does not imply a naive attitude towards "physical reality". The acoustic signal certainly exists, but no-one can describe it in all its physical complexity: as soon as phoneticians make observations and describe them, they are abstracting from physical reality. Thus, all such observations are inspired and supported by particular theoretical principles. I simply believe that when the linguist has the choice between two positions which seem to be equivalent except that one fits better with the physical data than the other, the former is to be preferred.

Note on transcription: Distinctive features are phonological, hence enclosed in obliques: /central/. Phonetic features, like allophones, are enclosed in square brackets: [occlusive].

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DYNAMIC PHONOLOGY AND THE INDO-EUROPEAN SOUND SHIFT

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In the Indo-Europeanist tradition, the relationship between the Germanic languages and the other Indo-European languages has been described largely in terms of the First Germanic Sound Shift (Grimm 1893; see also Brugmann 1904, among many). Traditionally, the shift has been viewed as strengthening (or provection) from a proto-Indo-European consonant subsystem characterized by the dentals [dh] (or more likely [ɗ]), [d], and [t]. (I use the dentals as exemplary throughout this paper.) This strengthening yielded the Germanic subsystem characterized by corresponding [d], [t], and [θ], respectively. Such strengthening was carried out along the fortis-lenis scale, indicating clearly that the change occurred in a fortis-lenis language (see Griffen 1979). Thus, for example, we find such correspondences as Sanskrit dhāya-ḥ 'nourishing' to Gothic daddjan 'to nurse', Latin duo 'two' to Gothic twai, and Latin trēs 'three' to Gothic þreis.

To this First Germanic Sound Shift, or simply Grimm's Law, there is a major exception, known as Verner's Law. Verner (1875) found that not all occurrences of [t], for example, strengthened to [θ], but rather some underwent weakening (or lenition) to [d]. These consonants he described as occurring noninitially (or medially) and immediately before a vowel stressed in the protolanguage. Thus, for instance, we find Greek patḗr 'father' corresponding to Gothic fadar (Verner's Law), while Greek phrḗtēr 'brother' corresponds to Gothic brōþar (Grimm's Law).

In several articles (Griffen 1979, 1980b, 1982), I have pointed out a glaring inconsistency in this traditional view. In a change along a tense-lax, fortis-lenis scale as we find here, each alleged change to the fortis (that is, each strengthening) occurs in an environment indicative rather of a change to the lenis (a weakening). In the exception, the alleged change to the lenis occurs in an environment that would support, if any change at all, a change to the fortis. For example, intervocalically where stress and clusters are not factors, as in the change represented by the correspondence between Latin pedis 'foot (genitive)' and Gothic fōtus, the traditional Lautverschiebung would maintain a change to the fortis, in an environment that even Meillet recognized as one of lenition: "Certain principles of change are universal; for example, one will not be surprised to see the tendency to reduce the finals, to see intervocalic consonants undergo the influence of neighboring vowels and thus be made like them by becoming voiced or by losing part of their closure. . ." (1970:9).

It is not enough, however, to point out such inconsistencies and to attribute them to some roughly defined typological aspects, as we find in Hopper 1973, Gamkrelidze and Ivanov 1973, Bomhard 1979, and others. Rather, as phonological systems are based upon phonetic detail, it is

necessary to justify such changes on the basis of phonetic principles. That is, for phonological analysis to be explanatory and not merely descriptive (as these terms are found in the dictionary), we must give precise phonetic reasons for the data.

In several previous Fora, I have presented to this Association a system of dynamic analysis and its application to such fortis-lenis systems (particularly Griffen 1977a, 1980a). Given the explanatory need for justifying change with reference to precise phonetic principles, such an analytical framework is absolutely necessary, for (whatever one may think of the phoneme) the phonetic speech event most clearly operates in a continuum. As demonstrated in the working models of dynamic phonetics (see Mermelstein 1973, 1975; Öhman 1965, 1966; Sawashima and Cooper 1977, and many more), moreover, the continuum can be sequentially segmented no further than the syllable.

Within the syllable, features are organized in accordance with the principle of dynamic coarticulatory constraint--certain features and feature types constrain others with which they are simultaneously articulated. These patterns of dynamic coarticulatory constraint can be illustrated in the syllabic frame, represented in figure 1. The most important aspect of this syllabic frame for our purposes here is that "consonants" are not articulated sequentially with the syllabic vowels, but as obstructions constraining the vowels with which they are coarticulated.

In dealing with relationships along the fortis-lenis scale, moreover, it is imperative that we understand the substance of these syllabic vowels and their consonantal obstructions. A vowel consists of a particular position of the tongue body, height of the jaw, and protrusion of the lips, all conspiring to create resonance chambers which impose upon the fundamental frequency (from the laryngeal activity) particular patterns of formant frequencies. The most pertinent formants are relatively low (that is, measured in relatively few cps).

An obstruction, on the other hand, consists of a stoppage or hindrance to the airstream with the vocalic articulators already in place or in motion. The particular position of the obstruction and its constraining degree along the fortis-lenis scale conspire to disrupt the regular formant frequencies of the vowel. This disruption is carried out mainly in the frequencies higher than the most pertinent frequencies of the vowel.

In an acoustic investigation involving Welsh (Griffen 1975:chapter 10), a language maintaining a fortis-lenis system that is both well developed and historically consistent, informants from several dialect regions were asked to recite the nonsense words ddahadd [ɗahaɗ], dahad [dahad], tahat [tʰahatʰ], and thahath [θahaθ], with the initial and final consonantal obstructions demonstrating pertinent degrees along the fortis-lenis scale. The ratio of one obstructive sound to the others was the same among all speakers, though of course, the precise frequencies varied (compare the relativity principle of Jakobson and Waugh 1979:13-8). In the speech of one exemplary subject, spectrographic evidence revealed that in the first case, [ɗahaɗ], the energy associated with the consonantal obstruction was concentrated entirely at frequencies lower than 1500 cps in the initial position and 1000 cps in the final position. In the second, [dahad], it was distributed more evenly, with most of the post-release energy concentrated below 3000 cps in initial position and with an off-glide in final position with most of its energy below 1000 cps and

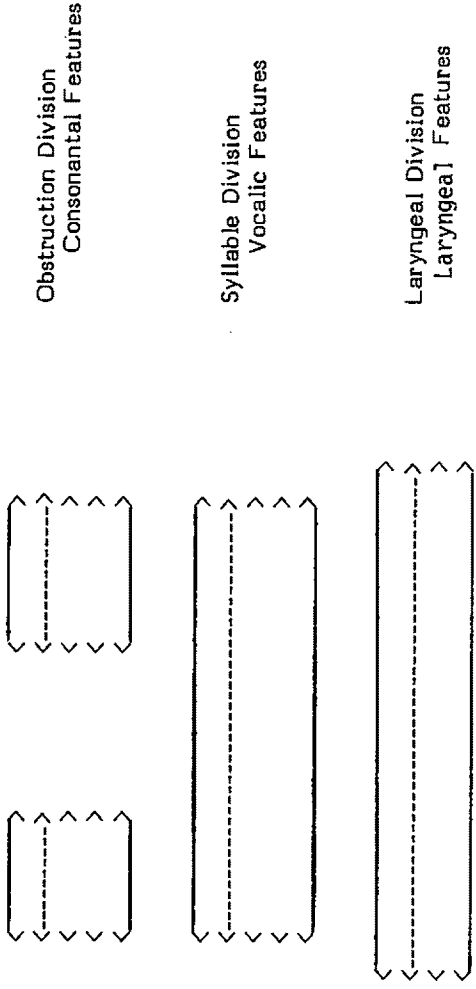


Figure 1: Syllabic Frame

some below 500 cps. In the third, [t^hahat^h], it was entirely above 500 cps in the post-release stage and with heavier concentrations above 3000 cps and traces above 5000 cps in initial position; while in final position, that above 2000 cps was far stronger than was that below 2000 cps. In the fourth, [θahaθ], this energy was almost entirely above 1000 cps with traces in both positions above 7000 cps. (The relevance of release energy and off-glides to a fortis-lenis system has been established quite definitively in Lisker and Abramson 1967; the relative weakness of final position vis-à-vis initial position is due to archiphonological neutralization--see Griffen 1975:104-11--and indeed to the tendencies noted by Meillet, above.)

Thus, we see that the fortis-lenis relationships among [ð], [d], [t] (or [t^h]), and [θ] (again, using the dentals as exemplary) is marked by a ratio of high-to-low frequency emission. With the lower frequencies more closely associated with the vowel and the higher with the obstruction (a finding very neatly consistent with the observations of Meillet), the weakest (lenis-most) maintains more vowel-like, lower-frequency obstructing characteristics, while the strongest (fortis-most) maintains more consonant-like, higher-frequency obstructing characteristics.

As for the physiological impetus for this, we find pertinent evidence in the cineradiographic studies of Perkell (1969:36-7). Perkell measures the width of the orifice of the larynx during the articulation of the nonsense words [hə'zɛ], [hə'dɛ], [hə'tɛ], and [hə'sɛ]. Phonetically, the [z] and the [s] pattern after the fricative obstructions, the lenis-most and fortis-most members, respectively, of the fortis-lenis scale. At the point of widest dispersion, approximately 75 msec before release, the width of the orifice of the larynx for the lenis-most member is approximately 4.1 mm, for the next member 5.6 mm, for the next member 7.2 mm, and for the fortis-most member 9.4 mm. This graphs out to being about as close to an arithmetic progression as we may expect in nature. In each case, the orifice of the larynx expands beginning about 150 msec before release and then contracts to a point of minimum dispersion about 20 msec before release.

The widening of the orifice of the larynx may be due to pressure and resistant tension, as suggested by Palmer (1964), or it could be due to an overt muscular gesture, as Perkell himself suggests (compare also Lisker and Abramson 1967; Kent and Moll 1969; Ladefoged 1975:269-71). Whether cause or effect, however, the widening of the orifice of the larynx signals heightened pressure in a position of the apparatus where it can at high degrees constrain voicing regardless of the position of the obstructive articulation, an hypothesis supported by the findings of Nihalani (1974), and where it can be realized as glottal frication--either as preaspiration or as the aspiration associated with obstructions. Thus, within a system of constraint, there are physiological correlates to the concept treated further below that the basis of such a fortis-lenis scale may be found in some form of aspiration. This makes acoustic sense, since aspiration is marked by high-level energy; as obstructions become more fortis, then, this high-level energy becomes more and more dominant.

It is in the dynamic syllabic frame as it is affected by the characteristics of an aspirate fortis-lenis scale that we find our phonetic justification for treating the relationship between Germanic and the other Indo-European language groups as the product not of a Germanic sound

shift, so much as of an Indo-European one.

Let us first consider the intervocalic environment mentioned above, where stress is not a factor. In dynamic terms, such a situation can be represented schematically in figure 2 (here simplified to show only the most basic "consonant-vowel" relationship). In illustration (a), we find an initial consonant constraining an initial syllable, so that obstruction is carried out at the very onset of speech. In illustration (b), however, we find a different situation. Here, the consonant is imposed upon on-going vocalic emission, and speech in a phonetic/phonological word-unit proceeds through vowels in a continuum--there is no break, as segmentation might erroneously imply. As such, then, the consonant must overcome this on-going continuum, and if there is no increase in stress or aspiration, it must necessarily be weaker than the consonant in illustration (a), which imposes its obstruction during a pause. This is perhaps clearest in acoustic terms--the high-frequency obstructive emissions initiated in a pause quite logically maintain a greater high-to-low frequency ratio than do those initiated while competing low-frequency sound is being emitted.

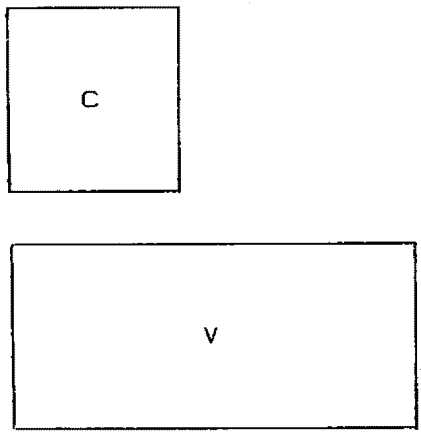
Thus, we find such progressively weakening series of changes as that in which Latin vīta 'life' became Spanish vida, and Spanish vida ultimately came to be pronounced with intervocalic [ð]. The same such neutralization (in the terminology of Trubetzkoy 1969:chapter 5) can be seen in word-final obstruction, in which the consonant also must constrain an on-going vocalic emission. For example, Latin David was borrowed into Welsh as Dafydd [davɨð], which came to be pronounced simply as [davɨ] (hence the name Davy and its derivatives).

When we apply these phonetic principles to Grimm's Law, however, we find a major problem. The phonetic environment that should lead to weakening is described as leading to strengthening. Thus, as pointed out above, the dental in Gothic fōtus 'foot' is said to have derived from its lenis counterpart found in Latin pedis. Obviously, such changes could not have occurred as they are described in the Lautverschiebung. Rather, we should expect the opposite.

In Verner's Law, we find another puzzling description. Where stress usually occurs in the protoforms is in initial stem position--the initial syllable of a (phonological) word. This is also the environment represented in figure 2, illustration (a), where the consonant is articulated more strongly because the obstruction is initiated in or at the end of a pause. However, when stress occurs in a noninitial syllable, that syllable is realized with heightened articulatory force, which also affects the consonantal obstruction in a way analogous to the initiation of a new phonological word. Thus, in an aspirate system we may find a type of spontaneous aspiration in this environment, as seen most clearly in the Welsh alternation between brenin ['brenin] 'king' and brenhines [bren'hines] 'queen', and especially in such forms as pysgod ['p^{h}asgod] 'fish' and pysgota [p^{h}asgo't^{h}a] 'to fish' in which we see strengthening along the fortis-lenis scale brought on by the aspiration. (Compare Watkins 1976.)

The shift of stress to a noninitial syllable, then, should bring about an environment of heightened aspiration or tension for the initial consonant of the stressed syllable. As noted above, this initial consonant would maintain a position homologous to the initial consonant of the phonological word, at least insofar as stress and aspiration may be con-

(a)



(b)

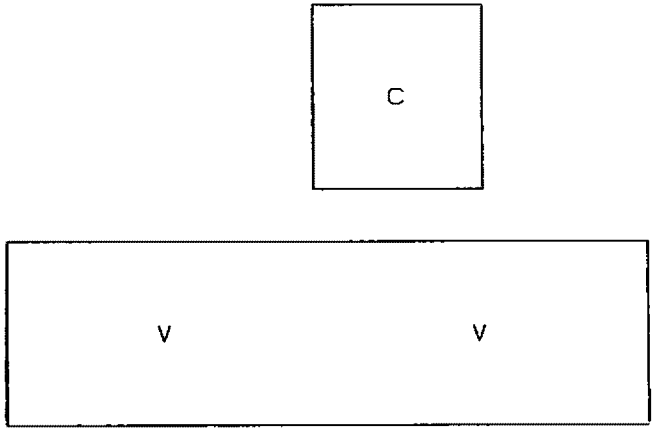


Figure 2: Consonant-Vowel Relationships

cerned. In Verner's Law, however, we find the rather baffling description in which it is claimed that the dental in Gothic fadar 'father' derived from its fortis counterpart as found in Greek patēr for the very reason that the protoform maintained its stress on the second syllable, and then it quite conveniently shifted the stress after the change had occurred. Inasmuch as the heightened stress should be indicative of heightened articulatory force and, in any case, certainly not of weakened articulatory force (with or without the added influence of aspiration), such changes could not have occurred in accordance with Verner's Law. Once again, we should expect the opposite.

In more accurately accounting for the phonetic requirements involved in the historical development of Germanic vis-à-vis the other Indo-European languages, I should first posit a more primitive consonant subsystem fully recognizable as one based upon the aspirate fortis-lenis scale. Again with dentals as exemplary, this system consists of [d], [t], and [t^h] (compare Trubetzkoy 1969:151-2). Let us see, then, what we come up with when we use this system in the data and have changes occur only by way of the phonetically justifiable processes described above.

To backtrack slightly, however, and to give some background to this system, we should first apply the principle by which this system in all probability derived, preliminary to any discriminating changes. This principle, as noted above, is the inherent strength of initial position. I maintain that this strength had already aspirated the tenuis [t] to the aspirata [t^h] in all such cases. Actually, what we find here is the primitive divergence of the original fortis from the two-member correlation [d]-[t], much as it is posited for Brythonic by Sommerfelt (1962). Of course, other instances of strength in the more primitive environments (due to stress, combinations, and other such factors) had also undergone this preliminary strengthening. This divergence yielded, then, our three-member system, the most primitive recognizably fortis-lenis one (as opposed, for example to one based on the voiced-voiceless correlation). This background information is necessary first to establish the aspiratae and to justify phonetically the system based upon their inclusion (as opposed to some other, typologically-motivated reconstructions) and second to maintain consistence with the well-established principles of implicational markedness as developed by Jakobson and Halle (1971).

Of course, after these primitive strengthenings and before the Indo-European shifting, some occurrences of [p], [t], and [k] did reëstablish themselves in the protolanguage. That these tenues are later additions, though, can be seen in the remarkable scarcity of these tenues in initial position of words in Gothic. Indeed, there are only two such words with initial [p] listed in Pokorny 1959. As the [b] from which these allegedly derive (according to Grimm's Law) is the least marked plosive in language (compare Jakobson and Halle 1971; see also Blache 1978), such a dearth would support both this primitive strengthening (wiping out the initial tenues altogether) and the reconstructions below (allowing the least marked media to remain intact before and after the shifting).

Maintaining the vowels as they are, I use the reconstructions of Pokorny (1959) with the substitution of the new consonant subsystem in the table in figure 3 (double underlines designating the substitutions under study in the example, single underlines designating others within the word). In this table, the numbers in parentheses refer to three general

	Reconstruction		Germanic		Indo-European
b-	ber- 'to carry'	Got	bairan 'to carry'	Skt	bhárati 'carries' (1G)
-b-	terb- 'to wind'	OHG	zerben 'to turn'	Skt	dr̥bháti 'winds' (1)
-'b-	ubér 'over'	OHG	ubir 'over'	Grk	hypér 'over' (2)
d-	dē(i)- 'to nurse'	Got	daddjan 'to nurse'	Skt	dhāya-ḥ 'nourishing' (1G)
-d-	beud- 'to observe'	OS	biodan 'to present'	Skt	boddhár 'knower' (1)
-'d-	k^hm̥dóm 'hundred'	Got	hund 'hundred'	Lat	centum 'hundred' (2)
g-	ger- 'to jut forth'	OIc	grǫn 'mustache'	Grk	charḗn 'upper lance point' (1G)
-g-	steig- 'to climb'	Got	steigan 'to climb'	Skt	steighnōti 'climbs' (1)
-'g-	sĕg- 'to cut'	OHG	sega 'saw'	Lat	sēcāre 'to cut' (2)
p-	paita- 'goat skin'	Got	paida 'garment'	Grk	baítē '(goat)skin garment' (1G)
-p-	deu-p- 'deep'	Got	diups 'deep'	Ill	bythós 'deep' (1)
t-	tuð(u) 'two'	Got	twai 'two'	Lat	duo 'two' (1G)
-t-	set- 'to sit'	Got	sitan 'to sit'	Lat	sedēre 'to sit' (1)
k-	kăr- 'to call, to cry out'	Got	kara 'care'	Grk	gḗrys 'voice' (1G)
-k-	sāk- 'to track'	Got	sōkjan 'to seek'	Lat	sāgīre 'to trace' (1)
p^h-	p^hĕt- 'foot'	Got	fōtus 'foot' (3)	Lat	pedis 'foot (gen.)'
-p^h-	nep^hod- 'grandchild, nephew'	OIc	nefe 'nephew' (3)	Skt	nápāt 'grandchild'
t^h-	t^hrei- 'three'	Got	þreis 'three' (3)	Lat	trēs 'three'
-t^h-	uet^h- 'year'	Got	wiþrus 'yearling' (3)	Skt	vatsá 'year'
k^h-	k^huon- 'dog'	Got	hunds 'dog' (3)	Lat	canis 'dog'
-k^h-	t^hak^h- 'to hush'	Got	þahan 'to hush' (3)	Lat	tacēre 'to hush'

Figure 3: Table of Correspondences

conditions that obtain in aspirate fortis-lenis languages:

> (1) Where accent is not a factor, intervocalic consonants may change to the lenis.
> (2) Where accent creates a position of fortis strength, intervocalic consonants may change to the fortis.
> (3) An aspirate fortis consonant, especially in a position of fortis strength (as in word-initial position), may become a fricative.

While the first two conditions are treated above and derive from the consonant-vowel (obstruction-syllable) relationship of dynamic coarticulatory constraint, the third condition may need some explanation. As pointed out in detail in Griffen 1975:chapter 7 (see also 1980a, 1981b), aspiration or geminate provection in Welsh has caused this heightened degree of strength, as in the development of Latin litteras 'letter' as Welsh llythyr [ɬəθir]. Of course, the most famous example of frication occurring from an aspirata as such is found in the development of Greek, in which the process was generalized to affect all aspiratae in all environments. For example, Greek theós 'god' was pronounced [tʰe'os] in the classical period, but [θe'os] in the koine, medieval, and modern (compare Browning 1969).

(Not always does the strengthening of an aspirata result in a fricative, though. In southern (Oberland) dialects of Swabian, which maintain the simple three-member opposition of aspirate tension exemplified by the dentals [d]-[t]-[tʰ], what is found in northern (Unterland) dialects as the farewell [pʰiədegot] (<MHG behüete dich got) 'God protect you' is realized as [pfyətəgot] (Kauffmann 1890:179). Of course, as a farewell, it is spoken (or usually called) with an extraordinary degree of initial articulatory strength, resulting in the affrication of the heavily aspirated aspirata. Such affrication, though, follows the very same tendency as that of condition (3) and is also quite prominent in New High German as well, again as a result of strengthened articulation (see Griffen 1981a).)

I cannot overemphasize the fact that these are general conditions or tendencies and not "sound laws" or "rules." They are obtained from phonetic principles and phonetic facts and should not be confused with the type of arbitrary sound laws developed early in the Indo-Europeanist tradition and maintained even to this day of phonetic enlightenment. Insofar as these earlier sound laws are concerned, we should see right away that Grimm's Law violates condition (1) and Verner's Law violates condition (2).

In the reconstruction proposed here, however, all three of these conditions are met properly. In Germanic, there is no real sound shift at all. Indeed, the only change is the application of condition (3), yielding, for example, Gothic þata 'that' which would have derived from a protoform *tʰat-, which could also have yielded Sanskrit tád (tát). Later in Germanic, however, several dialects did at least temporarily undergo condition (1), yielding such correspondences as Gothic fadar 'father' and Old Icelandic faðir.

In the rest of Indo-European (with the major exception of Armenian--see Griffen 1982), conditions (1) and (2) apply where possible. This is still, though, hardly what we should call a sound law, for this series of

changes is nothing more than the simple and natural tendency that among the mediae and tenues, weakening occurs in weakening environments, strengthening occurs in strengthening environments, and no change necessarily occurs in nonweakening and nonstrengthening environments. As such, then, the shift is neither mysterious nor especially interesting except for its importance in showing the Indo-European language relationships.

A more interesting aspect of the shifting, is the generalization of condition (1)--represented in the table as (1G)--such that it occurred in all environments not otherwise blocked (by clusters or strengthening). When we consider, though, that we are working within a fortis-lenis system and that condition (1) represents weakening (or lenition) that would (if handled in isolation) lead to an analysis based upon principles of archiphonological neutralization, then even this aspect of the phenomenon appears far more natural, though certainly indicative of a general shift. As pointed out in Griffen 1977b, such shifting along a fortis-lenis scale does at least mimic the generalization of archiphonological neutralization and the realization of the unmarked member of an opposition.

This leaves us with one remaining aspect of the shift--the change from aspiratae to tenues, or at least the lack of change from aspiratae to fricatives. Of course, we can explain this in an uncomplicated, straightforward manner by stating that the other Indo-European languages simply did not apply condition (3) (which is not a necessary change, anyway) and that tenues and aspiratae in many languages consequently merged. While such an analysis can stand on its own, since the absence of nonnecessary change need not be justified; nevertheless, we can in fact justify this lack of change and even the merger by pointing out that there was a shift in progress and the shift proceeded (as expected) through a generalized neutralization to the unmarked, less fortis member. It would indeed be odd if during a general lenition, which is phonetically a general weakening of articulation with the lowering of the ratio of high-to-low frequency emission and the narrowing of the orifice of the larynx, fortis strength were to be enhanced or even maintained in environments affected by this general weakening.

Thus, we now have an explanation, completely consistent with phonetic facts and principles, for this relationship between Germanic and the other Indo-European language groups. As such, I would maintain that it is superior to the different alternatives posited on the basis of typology and making use of rather nebulous "glottalizations" (as in Hopper 1973, for example). But by all means, it should be taken as preferable to the traditional description consisting of arbitrary "sound laws" that had to be obeyed, lest Sanskrit lose the privileged position it had already lost in anthropology (compare Childe 1926).

Moreover, such an analysis is possible only if we abandon the fictitious and misleading speech segment and examine the phenomenon from within the dynamic continuum. So long as we tie ourselves to the segmental phonemic fiction, derived only for the convenience of the analyst and not on the basis of the evidence (compare Twaddell 1935), then we shall be forced into accepting arbitrary "sound laws" and missing entirely the manner in which speech is transmitted, perceived, and consequently changed. Only through a direct examination and analysis of the continuum on the basis of dynamic coarticulatory constraint can we even pur-

port to construct analyses that describe and explain the ways in which languages develop and change.

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ON COMPENSATORY LENGTHENING: THE ORIENTAL PERSPECTIVES

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PURPOSE

It is well-known in the literature of Historical Linguistics that compensatory lengthening is a 'legitimate' process of sound change in many languages. This process, though it has never been clearly defined concerning its nature as to whether the sound change involved is phonetic or phonemic, is nonetheless based on attested materials whereby vowel length of such a language has more often than not resulted from loss of a consonant, usually a (velar) nasal, which at one time followed the lengthened vowel's short version. In Germanic, we have examples like OE gōs < pre-OE *gans, cf. German Gans 'goose', OE ūs < pre-OE *uns 'us', OE brōhte < PGmc /branxta/ 'brought', and OE þōhte < PGmc /þanxta/ 'thought' to support the value of this idea. Recently, however, de Chene and Andersen (1979:55.3.505-35) have challenged the notion of compensatory lengthening and proposed that it be interpreted in a different light. In general, they advocated that "known cases of compensatory lengthening can be subsumed under other sorts of change. There is no such distinct phonetic process as compensatory lengthening, and accordingly no unified phonetic explanation (such as 'preservation of syllable weight' or the like) should be sought" (p.507). They further argued that "these processes can be understood as the transition of the consonant, through loss or reduction of its occlusion, to an eventual glide G. It is the monophthongization of the resulting sequence (X)VG(Y) which gives rise to a syllable nucleus that is interpreted as distinctively long. In consequence, cases of apparent compensatory lengthening can be analyzed (as far as their phonetic bases are concerned) as a combination of consonantal weakening in certain positions followed by monophthongization; and compensatory lengthening per se can be eliminated as an independent member of any inventory of phonetic process-types" (p.508).

They argued furthermore that "the existence of an independently motivated length contrast in the language is a necessary condition for compensatory lengthening; in other words, that no language INTRODUCES distinctions of length into its phonological system through compensatory lengthening alone" (p. 508). In saying that compensatory lengthening consists simply in weakening of occlusion followed by monophthongization of a VG sequence, they assert that there is no independent PHONETIC PROCESS for which this label is motivated. However, they also say that the interpretation of some outputs of phonetic monophthongization as long vowels, and others as short vowels, suggests that there is a PHONOLOGICAL PROCESS to which this

name could be given: the interpretation of the resulting phonetic material as structurally parallel to long, rather to short, vowels (p. 508).

While the problems raised by de Chene and Andersen are challenging and valid, to a certain extent, at least as far as the examples cited from non-oriental languages are concerned, I do not think that their theoretical construct for a universal claim across the board is quite attainable, when other languages belonging to non-Indo-European families are taken into consideration. It follows that this paper will be concerned with cases of Japanese long vowels some of which come from Chinese loanwords with loss of the syllable-final nasal in order to show that compensatory lengthening does take place in some form, albeit 'indirectly', as we shall see below. In essence, I shall discuss: (1) whether the condition stated by de Chene and Andersen is really necessary; (2) if not, how does compensatory lengthening come into being (e.g., can the writing system 'cause' lengthening to happen?); and (3) whether or not after lengthening has taken place shortening of extant long vowels (i.e., reversal of the process as part of a continuing sound change) is theoretically conceivable.

JAPANESE LONG VOWELS

Modern Japanese is noted for its phonemic vowel length; the contrast between long vs. short vowels exists not only between native words, like to: 'ten' and to 'door' but also between loanwords, such as bi:ru 'beer' and biru 'building'. If the claim made by de Chene and Andersen were true, it would mean that the loan pairs came into being on account of the existence of the native pairs (due probably to analogy) and that the native pairs in turn had developed from an earlier sequence of (X)VG(Y), which had resulted from a still earlier sequence of (X)VC(Y), whereby the consonant had weakened to G. But no Japanese philologist dares posit the Proto-form of to: as being derived from something like (X)toG(Y) < (X)toC(Y) nor can any historical linguist find a document to attest such a development in the history of Japanese. For one thing, if this kind of development were true, de Chene and Andersen would have to force an impossible morpheme boundary on the sequence between (X)to and C(Y) or (X)toC and (Y) in order to allow for C to weaken to G. In fact, this conjecture must have been what they had in mind when they introduce cases of glides developed from stops by citing the following Japanese verbs as examples:

STEM		PRESENT (-u)	PAST (-ta)
mat-	'wait'	matu	matta
sin-	'die'	sinu	sinda
kar-	'mow'	karu	katta
kak-	'write'	kaku	kaita
kag-	'smell'	kagu	kaida

Note that they interpret the /i/ in 'write' and 'smell' as a glide (which is not true, by the way) and that the last-mentioned example shows additionally that progressive voicing of the /t/ of the past-

tense suffix /-ta/ (observable also in 'die') must have preceded the shift of syllable-final velar stop to /i/ (which is true synchronically but not true diachronically). But there is no morpheme boundary of any kind in to:, synchronically or diachronically. It follows that the long vowel in 'ten' cannot be explained or interpreted by the sequence posited above by de Chene and Andersen. So, something else must be done to account for the introduction of vowel length into the Japanese phonological system. To do so requires shifting the perspective from a hitherto speculative assertion to a more substantive ground.

Physiology of Perception

First, it is of significance to note that there are sufficient documents to substantiate the fact that historically, at least from the time kana was invented to the beginning of the medieval period (roughly from 7th to 12th centuries), Japanese did not have vowel clusters irrespective of whether morpheme boundary would intervene or not. Thus, while words with VCV and CVCV were in abundance, there were no words with the CVV sequence. What would happen, then, if a morpheme ending in a vowel were to be combined with another beginning with a vowel, too? The Japanese at that time had two solutions; namely, (1) to delete one of the vowels or (2) to add a consonant in between. Examples are:

DELETION	ADDITION
naga 'long' ame 'rain' nagame	haru 'spring' ame 'rain' harusame
ara 'rough' iso 'shore' ariso	mi 'imperial' ine 'plant, misine

Note that in historical linguistics we have terms like excrescent (for changes in word-ending position that lead to development of an additional consonant, e.g., sinst for 'since'), apocope (for the loss of final vowel, e.g., help<helpe), and syncope (for the loss of medial vowels, for instance, the OE first singular preterite of temman 'tame' was temede; both weakly stressed vowels have been lost, to yield NE tamed). Yet none seems to fit the Japanese changes. But during this same period lots of foreign words were being imported, primarily from Chinese. The borrowing left a permanent and extraordinary impact on Japanese in that it gave rise not only to changes in the phonological structure of Japanese (and other realms as well) but also to a new writing system first known as Man'yogana and later modified as katakana and hiragana.

Now, before I talk about the borrowings of the ancient periods, it is of importance that I discuss briefly the physiology of perception among the Japanese when they import English words from modern English into their vocabulary. Here, I assume that the human brain does not change much over a period of, say, one thousand years, which is to say that the Japanese one thousand years or so ago would have the same capacity and mechanisms to perceive and imitate sounds that were 'foreign' to them at the time of borrowing. Since we do not have any informant from the 7th or 8th century, let me rely on modern Japanese for information on the physiology of perception among the Japanese, because Japanese has been going through

another stage of massive borrowings since the end of World War II.

What interests me most here is, of course, the length contrast in such loanwords as bi:ru and biru cited above. A cursory examination of them suggests that (1) stressed vowels, (2) glided vowels, and (3)retroflex vowels, as in the spellings of -er, -or, and -ar, are perceived as long for which the Japanese have invented a different symbol, viz., " — "; this symbol may be construed to mean that the length so perceived in those loanwords is somewhat different in nature, historically speaking, from the extant length contrast of 'native' words (including words of Chinese origins). Examples are as follows:

STRESSED VOWELS	GLIDED VOWELS	RETROFLEX VOWELS
ko—hi— 'coffee'	su—pu 'soup'	mo—ta— 'motor'
hi—ta— 'heater'	te—pu 'tape'	suka—to 'skirt'
myu—zikku 'music'	bo—ru 'ball'	syawa— 'shower'

When stress, glide, and retroflexion come under one and the same syllable, as in 'world' and 'word', the Japanese naturally perceive it to be long. Consequently, 'world' and 'word' have been borrowed into Japanese as wa—rudo and wa—do, respectively.

There are, of course, exceptions in that (1) glided and stressed vowels are perceived as short whereas (2) unglided and unstressed, weak vowels are preceived as long. Examples for the former are: poteto 'potatoe' and redi 'lady'; and those for the latter are: pamiri— 'family' and komyu—niti— 'community'. (The second syllable of 'coffee' also falls into this category.) More interesting are examples like sopa— 'sofa', so—da 'soda', and mane— 'money'.

Note in particular that the stress patterns of 'sofa' and 'soda' in English are identical and yet the former is perceived as having short plus long vowels while the latter, as the reverse, and that not only is length added to the second syllable of 'money', when borrowed into Japanese, but the vowel is also lowered from high to mid.

Given these observations, it is not too difficult to see that the vowel length in the loanwords differs in some respect from the so-called long vowel of native words. One reason for postulating such a difference is because Japanese scholars have attempted to explain away the latter as a matter of the clustering of identical vowels (which in turn resulted from the clustering of different vowels as a consequence of the development of the CVV sequence). But this kind of explanation is simply unsuitable to the vowel length "introduced" in the loanwords. Such being the case, there now exist two possibilities: (1) if the length contrast of 'native' words can be interpreted as a contrast of cluster vs. non-cluster of vowels, whereby the clustering of vowels also exists among non-identical vowels, e.g., hae 'fly', hai 'ashes', or even aoi 'blue', then the vowel length in the loanwords has to be regarded as the result of a new sound change, although not necessarily owing to loss of a consonant; and (2) if the length contrast of 'native' words is not based on the clustering of identical vowels but a

genuine phonemic contrast of long vs.short vowel, then the vowel length in the loanwords is not the result of a new sound change, but rather the extension of the already existing length contrast (perhaps by analogy) of 'native' words. The second possibility automatically gives rise to the question of how the length contrast of 'native' words came into being in the first place. It is to this question that we must now address ourselves.

Japanese Rendition of Chinese Nasals

Since we have already noticed that the Japanese of today may perceive short vowels in English as long, and vice versa, it is quite reasonable to suspect that the Japanese of ancient times, when they first encountered Chinese, were similarly susceptible to differing perceptions, particularly when they heard syllable-final nasals in ancient Chinese. This observation is important, especially when the two languages at that time had two disparate phonological systems in that the Chinese system had three final nasals, -m, -n, and -ŋ, whereas the Japanese system had no such finals. It follows that when the Japanese heard those sounds, they must have had trouble differentiating one from the others, in particular, -n from -ŋ. The difficulty was not obvious in written documents, because Chinese characters were 'borrowed' directly as the writing system to become the so-called Man'yogana, as the kana syllabary was yet to be invented. It was not until the invention of the kana syllabary in the late Heian period that the difficulty really surfaced. According to the written records of that time, Chinese -m, -n, and -ŋ were rendered as follows:

CHINESE NASALS	JAPANESE KANA RENDITION	
-m	-mu (ム)	
-n	-i (イ)	
-(V)ŋ	-i (イ)	if V is high
	-u (ウ)	if V is non-high

e.g., 丁 (テイ) for high and 盲 (マウ) for non-high

Whether or not the Japanese of the Heian period did pronounce orally the Chinese nasals according to the phonetic value of the kana employed for the transliteration of the Chinese nasals is open to debate, however. My contention is that since literacy was confined to the elite upper class, which constituted a very small minority, those who could read must have somehow tried to approximate their pronunciations of the Chinese nasals as closely as they were pronounced by the natives, even though the kana notation was used. In this sense, then, the (イ) and (ウ) kana must have represented some sort of nasality in word-final position different from their oral value elsewhere, because at that time, as was pointed out earlier, the CVV sequence did not exist in the phonological system as a phonotactic possibility. This being the case, I am of the opinion that those kana had the phonetic value of

含 (カム)	kamu	丁 (テイ)	tenĩ
煩 (ホイ)	honi	盲 (マウ)	manu

This interpretation is quite plausible in view of the fact that later, during the Kamakura period, -mu and -ni for Chinese -m and -n, respectively, merged, becoming -n̄, a syllabic nasal, which was then represented by the kana (ん), a new symbol invented for that purpose. But I must hasten to add that it was during this period that the phonetic value of nasality subsumed by (い) and (う) for -ŋ in Chinese was being forgotten, resulting thereby in what may now be called 'spelling pronunciation' in the sense that what had once meant to be te(n)i and ma(ŋ)u now became tei and mau, respectively.

Such a development is far from the universal claim de Chene and Andersen purported to be; namely, the C (the velar nasal in our case) had to be weakened to the status of a glide first. Note that the -i and -u values did not develop from the velar nasal; rather, they were the Japanese renditions of the Chinese velar nasal and, therefore, were present from the very beginning. Consequently, they could not be regarded as glides by any means. But the loss of nasality subsumed by (い) and (う) in word-final position gave rise to a new phonotactic sequence that had hitherto been prohibited, a sequence that was to become the impetus of subsequent long vowels in Japanese. In other words, those loanwords now pronounced as tei and mau were destined to become te: and mo: in modern Japanese.

There was of course no morpheme boundary, at first, in the new phonotactic sequence of CVV. But it gradually affected other sequences that consisted of two morphemes, thereby creating a situation of not resorting to either one of the solutions mentioned. As a result, a morpheme sequence of naka plus udo became permissible, yielding a phonotactic sequence of CVV that admitted a morpheme boundary without having to resort to the deletion of one of the vowels or adding a consonant in between. Of course, morpheme sequences like nakaudo 'go-between (for a marriage)' have become nako:do in modern Japanese except in a religious ceremony whereby the archaic form of CVV (nakaudo) is preserved. It is probably for this reason that most Japanese scholars contend that the long vowel in Japanese may be analyzed as a cluster of two vowels.

CONCLUSION

I have in the preceding sections presented evidence against de Chene and Andersen's universal claim by using Japanese vowels as counter-examples. The conclusion I wish to draw from those examples is that compensatory lengthening is a feasible notion and did take place in the case of Japanese, provided of course that the velar nasal in Chinese was regarded as phonetically present in the Japanese renditions of Chinese loanwords. The presence of such a nasality is obvious: to preserve the sequences of VCV or CVCV, so as to prevent the occurrence of CVV. Of course, it was the disappearance of the nasal in such loanwords that subsequently created the sequence of CVV which in turn led to the lengthening of the vowels. Whether or not this lengthening of vowels should be regarded as monophthongization is also open to discussion. One reason

for objecting to the notion of monophthongization is that the vowel quality in the long vowel, as in the case of mo:<ma(ŋ)u or nako:-do<nakaudo, does not resemble either vowel in the cluster, which is to say that lengthening need not derive from monophthongization.

Now, if compensatory lengthening did take place and is a useful notion to explain the sound change in Japanese, there is an interesting question that needs to be asked. That is, can vowel length be shortened as part of the continuing process of sound change? Although the answer requires a more thorough investigation than just a casual observation, there is evidence to indicate that such a reversal is theoretically conceivable. For instance, there are now phrases in which the same morpheme (originally from Chinese with the velar nasal) is pronounced short in one but long in another, as in tozan 'mountain climbing' but to:roku 'registration'. Only time can tell as to how widespread this process will become in the future. But no matter what will happen, I believe the vowel length once created will not be eliminated.

There are for sure other sources for the long vowels in Japanese. Examples are glides in Chinese which were also perceived as -i and -u in Japanese. For want of time and space, I have omitted those cases in my discussion. But I hope to include them in a revised version later.

REFERENCE

de Chene, Brent and Stephen R. Andersen

1979 "Compensatory Lengthening," Language 55.3.505-35.

IV

MORPHOLOGY AND SYNTAX

FUNCTIONAL SYNTAX AND PRE-LINEAR LEXOLOGY

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The impetus for this examination of convergences and divergences in the treatment of grammatical phenomena by stratificational linguistics and by Paris School functional linguistics grew from an initial intent to compare and contrast the stratificational theoretical constructs morpheme and lexeme with the moneme and syntheme of functional linguistics. A discussion of morpheme and lexeme leads immediately to morphology and lexology, the rather natural consequence of which is then an examination of the stratificational morphology-lexology stratal distinction vis-à-vis the functionalist distinction between morphology and syntax. At first glance the convergence between syntheme and lexeme appears much greater than it really is, perhaps due to the fact that the items which are most often cited as justifications for the lexeme turn out to be synthemes as well.

The syntheme concept was explained in detail in Martinet (1967); they are "les unités linguistiques dont le comportement syntaxique est strictement identique à celui des monèmes avec lesquels ils commutent, mais qui peuvent être conçus comme formés d'éléments sémantiquement identifiables" (ibid.:6). The rather harsh clash between the absolute rigor of "strictements identique," for syntactic behavior, and "peuvent être conçus," for semantic identity, is an obvious recognition of the linguist's ability to be categorical in syntactic, but not semantic, assertions. Perhaps one of the most often cited examples of a syntheme is chemin de fer, a semantically motivated, and thus transparent, compound, but also, as may indeed always be the case for multiroot synthemes, semantically specialized. A formal characteristic of the syntheme is that no portion of it can be individually qualified without destroying the synthematic unit and its semantically specialized interpretation. The syntheme chaise-longue, for instance, does not tolerate the qualifier très; chaise très longue contains no syntheme.

The commonly encountered justification for the stratificational lexeme is an inventory of semantically very opaque compounds with an irregular base, which will, if viewed as monomorphemic, increase the inventory of morphological irregularities. David Lockwood (1972:21) lists the English verbs understand, undergo, withstand, withdraw, undertake; each of these lexemes is a simple lexemic realization of a simple sememic realizate and a simple lexemic realizate of a composite morphemic realization. The same type of argument which Lockwood makes with English irregular verbs Valerie Becker Makkai (1973) makes with irregular verbs

of Romance languages. Her compounds vary semantically from the not very transparent (e.g. Spanish contener) to the totally opaque (e.g. Spanish suponer).

It is only the "peuvent être conçus" relaxation of semantic identity which leaves open the possibility that understand and the like be considered synthemes. André Martinet (1967:13) does allow cranberry, with an otherwise non-existent cran-, as a syntheme. A cranberry, however, can be recognized as a kind of berry; by no stretch of the imagination is understanding a kind of standing. Martinet et al. (1979) tend to list as examples of synthemes only rather transparent compounds, although an exception is collègue. Mahmoudian et al (1976:403-408) recognize the semantic opaqueness of the constituent monemes of a syntheme, but specifically reject as synthemes the stems of concevoir, percevoir, recevoir, and apercevoir.

A very clear difference between the stratificational lexeme-morpheme distinction and the functionalist syntheme-moneme division is that in the former the two are viewed as constituents of different linguistic subsystems, but not in the latter. A constituent of the lexemic stratum is a lexeme, and a constituent of the morphemic stratum is a morpheme. Since, apparently in all languages, simple rather than composite realization from lexology to morphology is most commonly encountered, lexeme and morpheme are in the vast majority of cases co-terminous. Syntheme and moneme, however, are never co-terminous. Both the complex syntheme and the simplex moneme are components of the syntax.

Moneme and morpheme are not completely synonymous terms either. André Martinet (1967:1) mentions the Latin genitive plural marker -ōrum, as in dominōrum, as one morpheme. There is some disagreement about the concept of the morpheme, and some would call attention to the fact that most Latin nouns with genitive plural in -ōrum are masculine or neuter, while most with genitive plural in -ārum are feminine, the exceptions, however, may discourage segmenting the -o- and -a- as gender morphemes. In any case, Martinet's argument that the Latin genitive plural is not segmentable into a case morpheme and a number morpheme is unaffected. Lockwood (1973) shows a stratificational morphemic analysis in which -:rum is a single genitive-plural morpheme. In functional syntax, case and number choices represent two separate monemes; gender morphemes, at least in those cases where there is no correlation between grammatical gender and biological sex, represent no moneme at all. When the Spanish noun calle is chosen, a concomitant of that choice is feminine gender. The nominal syntagm la calle angosta represents three choices, and hence three monemes: calle, angost-, and the modality DEFINITE, as shown in Figure 1. There is no *el calle angosto; masculine gender is excluded by the choice of calle. There is no requirement that all phonemic material be accounted for syntactically, i.e. monematically or synthematically.

The lexology-morphology division in stratificational linguistics is somewhat different from the syntax-morphology division of functional linguistics. The lexology-morphology division remains

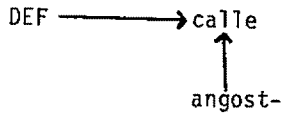

Figure 1

essentially a size-level distinction, much as in traditional grammar. Sydney Lamb (1964) shows word and phrase structures on the morphemic stratum and clause and sentence structures on the lexemic stratum. More recent studies suggest a general return to a more traditional morphology-syntax division: morphology studies word structure and syntax (i.e. lexology) studies structures above word rank. Lockwood (1972:113) states that "morphotactics, dealing primarily with grammatical words, handles the same things as traditional morphology." It is more than a little difficult to hide an apparent inconsistency between the handling of grammatical words by the morphotactics and the classification of apparent compounds such as understand as lexemes. Lockwood does add that "morphotactic classes are based on inflectional and derivational patterns" (ibid.); no mention is made of word-rank compounding. If lexotactics, which has "primary responsibility for clause structures" (ibid.) is made to nose-dive down to word rank to account for compounds, or for just those compounds with some morphological irregularity, there is no obvious justification for the nose dive except to salvage the commonly cited justification for a lexeme-morpheme distinction. The syntax-morphology division in functional linguistics is also a bit vague. Martinet (1972:158) states that morphology "is the presentation of those morphemes which have varying forms, and only those;" a language in which every morpheme has one and only one allomorph, therefore, is, or would be, a language without morphology. Syntax is said to be "the study and account of how listeners are able to reconstruct the experience that is being communicated from its linear presentation in the spoken chain" (ibid:160).

Some modifications in the concepts of syntax and morphology seem to have begun taking place in the early 1970's, judging from dates of publications. Martinet (1973) first, apparently unhesitatingly, defines morphology as "the presentation of the variations of the form of signifiers and the conditioning of these variations" (ibid.:21). He later asserts:

> "The fact that one and the same syntactic relation may present formal variations suggests that there is room for a morphology of syntactic units; in other words, syntax and morphology are not opposed as if they were complementary: (ibid.:23)

Martinet's specific examples of formal variations of the same syntactic relation are French locative alternation between en and à, conditioned by grammatical gender, and the Spanish alternation between a and Ø in the direct object, conditioned by the animacy hierarchy. With syntax now characterized as "the study of rela-

tionships" (ibid.), which we must understand as first-articulation relationships, it is only a small step to recognize not only the choice of functional moneme but also that of linear order in the domain of the morphology of syntactic units. Morteza Mahmoudian et al. (1976:302-3) assert that the ungrammaticality of *après autres quelques modifications vis-à-vis the grammaticality of après quelques autres modifications belongs to the realm of morphology; similar observations are made about the position of syntagms in sentences.

Modifications in the Paris School concepts of syntax and morphology, at least the morphology of syntactic units, occur more or less simultaneously with Martinet's development of a system of visual representations (i.e. diagrams) of syntactic structure; indeed it would not be hard to believe that the diagram system motivated those modifications to no small degree. Martinet's syntactic diagrams do not show linear order, not do they show stylistic variation. One and the same visual representation, as that shown in Figure 2,

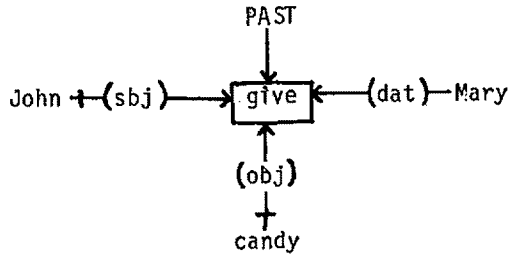

Figure 2

shows the "syntactic" (i.e. relational) structure shared by (1) and (2).

(1) John gave Mary candy.

(2) John gave candy to Mary.

If we compare functionalist visual representations with Tesnière's stemmas, we find that the former are more abstract, although the stemmas for (1) and (2) are only minimally different, as shown in Figure 3.

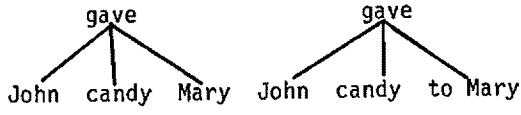

Figure 3

As shown, the indirect object marker to, called an "indice" or indicator, is included in the corresponding stemma. Martinet's vi-

sual representations of syntactic structure show functional syntax to be a pre-linear dependency grammar, somewhat like Tesnière's syntax. Martinet's syntactic model represents structural relationships exclusively; Tesnière's model is in this respect something of a mixed bag. In Martinet et al. (1970), syntactic relationships are treated under syntax, syntactic position under morphology. The grammar is not divided into one syntactic section and another morphological section; the morphology is interspersed throughout the grammar--in its three components: 1) inventory (of monematic classes), 2) syntax, and 3) synthematics--but then so is the axiology.

Lockwood (1980) has proposed a stratificational distinction between lexemic and morphemic case for phenomena which are accounted for by only partially similar methods in functional syntax. He cites data from Estonian, a language in which the non-partitive accusative syntactic case--non-partitive direct object in more traditional talk--corresponds to either nominative or partitive or genitive morphological cases. A similar situation is found in Finnish, which, like Estonian, has no accusative morphological case.

(3) Maksan laskun. 'I {pay / will pay} the bill'

(4) Maksan laskua. 'I am paying the bill'

(5) En maksa laskua. 'I {don't pay / won't pay / 'm not paying} the bill'

In (3), the singular non-partitive direct object is in the genitive morphological case, because the process is viewed as perfective. In (4) and (5), it is in the partitive morphological case because in (4) the process is viewed as imperfective and in (5) the sentence is negative. In Finnish, as in Estonian, non-partitive plural direct objects are in the nominative morphological case. Functionalist syntactic representation of (3), (4) and (5) are shown in Figure 4. All three Finnish sentences have the predicate maksa, modality NON-PAST, first singular subject, and object lasku-. Sentences (3) and (4) are only different in that the process of (3) is marked, as a modality of the object, as perfective, while (4) is marked as imperfective. Object function plus perfective triggers, in the singular, the genitive case; object function plus imperfective in the singular calls for partitive case. In (5) object function in combination with modality NEGATIVE on the predicate requires partitive case. If syntactic functions and modalities are marked, as in functional syntax, then an additional concept of syntactic case is not needed.

The need for a linearly ordered lexotactics is far from obvious. An examination of Leonard E. Newell's appendix to Lamb (1966) shows anataxis between the lexemic and morphemic strata primarily in that discontinous morphemic constituents, e.g. be--ing for progressive aspect, are not discontinous as lexemic constituents. But discontinuity does not arise either when linear order is non-existent. In contemporary stratificational practice, a semotactics not linearly ordered seems clearly to predominate.

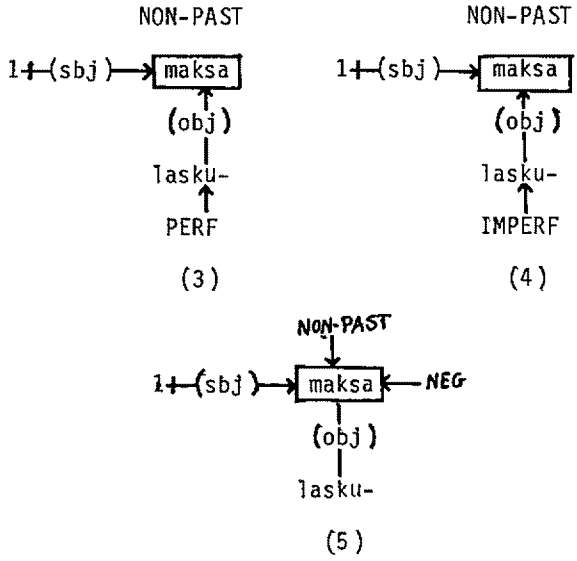

Figure 4

Why not both non-linear semotactics and non-linear lexotactics? The implication: linearity of semological and lexological processes does not exist independently, and the linearity of these processes in encoding and decoding operations is morphologically conditioned.

The principal goals of stratificational linguistics and those of functional linguistics are clearly different. Stratificationalism is concerned primarily with the encoding and decoding operations which speakers perform in transmitting and receiving linguistic messages. Functionalism is principally concerned with languages, i.e. with linguistic systems which are shared by groups of speakers sufficiently at least to permit communication among members of a group. Stratificational linguistics is, in fact, often called cognitive-stratificational linguistics; functional linguistics is situated clearly within typological linguistics. It comes then as no great surprise that stratificational linguistics is not well suited for typological linguistics; this is true for several reasons, including the following:

1) The different subsystems of language are so totally integrated that it is difficult to isolate a subsystem or a portion of a subsystem and treat it independently.

2) The principle of parsimony so dominates solutions to problems that addition of a small amount of new data can completely

> change an analysis. Stratificational theory is principally a theory of interconnections among subsystems (i.e. strata) and of component parts of subsystems (i.e. sign pattern, alternation pattern, tactics); assumptions about intrastratal relations seem virtually non-existent.

Functional linguistics, on the other hand, is unsuited for cognitive linguistics; to begin with, there is a total lack of integration of sybsystems, no way of mapping the structures of one subsystem into a contiguous subsystem. In addition, functional morphology must be elaborated to account adequately for linear grammatical structures. It is, in any case, clearly no valid argument against any model that it is unsuitable for doing what it was not intended to do.

There remains a serious question: are there two subsystems in language between the subsystem of linguistic semantics (i.e. semology or axiology) and phonology? If there are two grammatical subsystems, do they correspond to a size-level distinction as in traditional grammar? Tagmemic grammar, systemic grammar, and several other contemporary fixed-hierarchy grammars have rejected such a size-level division. Do the two grammatical subsystems, if there are two, correspond to 1) a grammar of relations and 2) a grammar of forms. Tesnière (1959) so conceived grammar, and there are observable movements in that direction now.

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LA CONSTRUCTION *V NP INF* : UNE SOLUTION MORPHO-SYNTAXIQUE À L'IMPASSE TRANSFORMATIONNELLE

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1. LES DONNÉES

La comparaison des constructions anglaises et françaises comportant un complément infinitif "nu" accompagné d'un syntagme nominal jouant le rôle de sujet logique (agent) révèle des similitudes et des différences que résument les données suivantes :

(1) a. *Karl demonstrated this example to falsify the system.

b. *Karl a démontré cet exemple falsifier le système.

(2) a. Krista let/saw the dogs attack the Hydroman.

b. Krista a laissé/vu les chiens attaquer l'employé de l'Hydro.

(3) a. John believes Krista to be wrong.

b. *John croit Krista avoir tort.

(4) a. *John believes to be on the right track.

b. John croit être sur la bonne piste.

Dans les deux langues, le signifié lexical du verbe principal est la variable déterminante qui décide de la possibilité pour l'infinitif d'accepter un agent explicite : il est exclu dans (1) avec un verbe comme demonstrate/démontrer (cf. determine/décider, notice/remarquer, etc.), mais permis dans (2) avec la sous-classe des verbes causatifs et de perception, et dans (3a) seulement avec les verbes "épistémiques" (acknowledge/reconnaître, affirm/affirmer, estimate/estimer, etc.). Pour ces derniers, on note un croisement remarquable entre l'anglais et le français : la grammaticalité de (3a) correspond régulièrement au refus de (4a), avec coréférentialité du sujet du verbe principal et de l'agent de l'infinitif, et vice versa pour (3b) et (4b).[1]

L'objectif de cette communication est de confronter succinctement les traitements fort différents que proposent de cet ensemble de faits deux théories syntaxiques — la Théorie standard étendue et la Psychomécanique du langage — et, simultanément, de démontrer la supériorité de la seconde approche sur la première.

2. LES HYPOTHÈSES TRANSFORMATIONNELLES DE CHOMSKY ET KAYNE

Des diverses hypothèses transformationnelles qui ont été

avancées[2], je retiendrai celles de Chomsky (1980b)et de Kayne (1981) qui présupposent l'une et l'autre le même modèle théorique organisé autour de la notion de "complementiser", dont je rappelle le strict minimum nécessaire à la compréhension de la suite :[3]

a) toute proposition, matrice ou incluse dans une matrice, est assumée être introduite par un "complementiser" abstrait noté COMP, selon la règle dans la base :

(5) $\bar{S} \rightarrow$ COMP – S

S désigne la même chose que le S initial des grammaires transformationnelles classiques, c'est-à-dire :

(6) $S \rightarrow \bar{\bar{N}} - \bar{\bar{V}}$

$\bar{S}$,dans le cadre de la "X-Bar Syntax", représente donc une expansion phrastique de S;

b) le noeud COMP peut être laissé vide, notamment dans les indépendantes et les principales, ou être rempli par une particule appropriée, comme <u>that</u> ou <u>que</u> introduisant une proposition enchâssée :

(7) a. Karl said [$_{\bar{S}}$ COMP that [$_S$ the argument was irrelevant]]

b. Karl a dit [$_{\bar{S}}$ COMP que [$_S$ l'argument n'était pas pertinent]]

Revenons aux données de départ, et d'abord aux deux phrases (1a) et (1b) qui, le NP étant tenu pour le sujet de l'infinitif, auront la structure :

(8) a. *Karl demonstrated [$_{\bar{S}}$ COMP e [$_S$ this example to falsify...]]

b. *Karl a démontré [$_{\bar{S}}$ COMP v [$_S$ cet exemple falsifier...]]

(e/v = empty, vide)

Il faut encore savoir que la grammaire contient un composant casuel qui assigne un cas aux syntagmes nominaux occupant certaines positions, en termes de relation de gouvernement : ainsi les catégories N (nom), V (verbe), P (préposition) et A (adjectif) sont des gouverneurs possibles de NP.[4] Dans (8a) et (8b), si l'on pose que le sujet de l'infinitif ne peut recevoir de cas à l'intérieur de S elle-même, ce que confirment :

(9) a. *Krista to give up the Two Horses Theory would be a pity.

b. *Krista renoncer à la théorie des deux chevaux serait regrettable.

le seul candidat gouverneur possible est le verbe de la matrice

qui, effectivement, assignerait le cas objet à this example/cet exemple si le composant casuel ne stipulait la condition :

(10) CONDITION DE BARRAGE

S-barre est un barrage absolu au gouvernement (i.e. aucune catégorie ne peut gouverner une autre catégorie par-dessus une S-barre)

Dès lors, le sujet de l'infinitif n'est pas marqué en cas, violant ainsi le filtre casuel :[5]

(11) FILTRE CASUEL

Toute phrase contenant un NP explicite est agrammaticale si ce NP n'est pas marqué en cas

ce qui rend compte de l'agrammaticalité de (8).

Le duo (3a) et (3b) dont la structure est identique :

(12) a. John believes [$_{\bar{S}}$ COMP e [$_S$ Krista to be wrong]]
b. *John croit [$_{\bar{S}}$ COMP v [$_S$ Krista avoir tort]]

pose alors un problème puisque le blocage du gouvernement en (3b) et la transgression résultante du filtre casuel ne se produit pas en (3a), tout à fait normale. Chomsky, après avoir envisagé pour l'anglais un marquage casuel exceptionnel du sujet de l'infinitif opéré par le verbe principal par-dessus $\bar{S}$ (1980a, 29), a ensuite proposé (1980b) que l'assignation du cas ait lieu après l'intervention d'une règle d'effacement supprimant à la fois $\bar{S}$ et le COMP vide, et donc l'obstacle au gouvernement de Krista par believes dans (12a).[6] Kayne (1981, 359-362) estime à juste titre insatisfaisante la première explication chomskyenne de la différence de comportement entre believe et croire : pourquoi, en effet, believe permettrait-il le gouvernement du sujet enchâssé, mais non croire, au lieu de l'inverse ? Il suggère une solution de rechange qui maintient l'impossibilité absolue dans les deux langues du gouvernement par-dessus deux limites S[7], mais postule que les verbes du type believe/croire prennent une S infinitive introduite par un "complementiser" prépositionnel invisible, sans réalisation phonétique :

(13) a. John believes [$_{\bar{S}}$ COMP ϕ [$_S$...]]
b. *John croit [$_{\bar{S}}$ COMP ϕ [$_S$...]]

La préposition faisant partie de l'ensemble des catégories lexicales capables de gouvernement, ce COMP ϕ se pose en gouverneur possible du sujet de l'infinitive. Toutefois, comme :

(14) a. It would be a pity for something to happen to her.
b. *Ce serait regrettable de quelque chose lui arriver.

atteste pour l'anglais seulement l'aptitude des COMP prépositionnels à gouverner la position sujet de l'infinitif adjacente, ce n'est que dans cette langue que le COMP ϕ assignera un cas à Krista dans (13a), tandis que (13b) viole le filtre casuel.[8]

Comme le signale Radford (1981, 330-331), les deux solutions — l'effacement de $\bar{S}$/COMP et le COMP ϕ — sont viciées par une circularité évidente qui leur enlève toute valeur explicative. En effet, la raison alléguée pour la permission du complément infinitif de (3a) de posséder un sujet explicite est l'absence de $\bar{S}$, ou la présence d'un COMP ϕ; et si l'on demande comment il se fait que ce complément n'a pas de $\bar{S}$, ou a un COMP ϕ, la réponse est qu'il accepte un sujet explicite![9]

Reste à examiner le cas de (2). L'analyse par effacement de Chomsky appliquée aux verbes "épistémiques" de (3a) s'étend sans difficulté à la classe des verbes causatifs et de perception de (2), mais il n'en va pas de même pour celle de Kayne, car le COMP ϕ devrait logiquement entraîner l'agrammaticalité de (2b) pour les mêmes raisons que (3b). D'autre part, la structure V$\bar{S}$ bloquerait le gouvernement du sujet de l'infinitif et le filtre casuel exclurait aussi bien (2a) que (2b). Kayne (1981, note 16) imagine alors que la grammaire universelle permet à ce groupe de verbes exclusivement de se faire suivre d'un constituant infinitif S qui diffère de $\bar{S}$ en ce qu'il n'a ni COMP ni INFL(ection) : la limite unique S autorise ainsi le marquage en cas du sujet enchâssé par le verbe de la matrice en anglais et en français.[10] Ici encore, le caractère ad hoc de la solution est manifeste, ainsi que sa circularité : si (3a) et (3b) sont acceptables, c'est parce que leur structure est VS et non V$\bar{S}$, et l'on présume que leur stucture est VS parce qu'elles sont acceptables.

Toutes différences neutralisées, le schéma sous-tendant les analyses de Chomsky et de Kayne s'articule comme suit :

a) les phrases (1), (2) et (3) comportent toutes une $\bar{S}$ infinitive contenant un NP sujet;

b) le NP sujet ne peut recevoir de cas à l'intérieur de S;

c) le principe du gouvernement en cas nécessite d'une part la prévision de la condition de barrage $\bar{S}$ pour bloquer l'action du gouverneur V de la phrase matrice et prévenir (1) — plus (3b) selon Chomsky; d'autre part, la levée de cette condition ou quelque mesure ad hoc pour rendre compte de (2) et (3a).

3. LES HYPOTHÈSES PSYCHOMÉCANIQUES

La seule convergence entre la démarche transformationnelle et la psychomécanique du langage concerne le point b) ci-dessus : pour Guillaume (1964, 251; 1973, 103) et Moignet (1973, 127), la position d'infinitif prive le verbe de sa capacité essentielle d'exercer

la fonction de prédicat à l'égard d'un sujet :

(15) a. *Krista swim across the lake.
b. *Krista traverser le lac à la nage.

Ce jugement, cependant, doit être révisé; j'ai montré ailleurs (Le Flem 1982, 4.2.1 et 4.2.2) que l'agrammaticalité de (15) découle de l'incompatibilité de la virtualité temporelle signifiée par la forme infinitive avec la modalité assertive, et qu'il suffit d'affecter à l'énoncé une intonation interrogative ou exclamative, ou encore, pour le français, de corriger cette virtualité en faisant précéder l'infinitif de la particule de, pour que la prédicativité s'exerce normalement :

(16) a. Krista swim across the lake?/!
b. Krista traverser le lac à la nage?/!
c. Et Krista de traverser le lac à la nage.

Pour le reste, le désaccord est total : le syntagme nominal et l'infinitif de (2) ne sont pas considérés comme les membres d'un constituant unique — $\bar{S}$ ou S — dans lequel ils seraient liés par un rapport fonctionnel — situation de (16) —, mais :

-"[ils] constituent un objet complexe dont le premier terme est pris dans le plan du nom et le second dans le plan du verbe." (Guillaume 1964, 251)[11]

-"l'un et l'autre sont du "vu" et l'un et l'autre subissent l'incidence du verbe voir à un support du côté du résultatif, indépendamment l'un de l'autre." (Moignet 1973, 127)

L'analyse s'accorde parfaitement avec les résultats de manipulations formelles appliquées à (2b) : passivation, détachement et relativisation de les chiens, pronominalisation. Ainsi, dans :

(17) Krista les a vus attaquer l'employé de l'Hydro.

la forme régime empruntée par le pronom indique bien qu'il n'est pas senti comme le sujet de l'infinitif, et la dissociation les/attaquer établit leur indépendance dans leur relation avec le verbe voir. Au fait, le comportement sous test de (2b) est en tous points identique à celui de la construction attributive :

(18) a. Daniel trouve Atchuk adorable.
b. Daniel le trouve adorable.

ce qui m'incite (cf. Le Flem 1982, 4.1) à substituer à la thèse guillaumienne du double objet celle d'un objet simple nominal accompagné d'un infinitif attribut de l'objet, tous deux apports au verbe principal. Précision non négligeable, que le manque de temps m'empêche de détailler, les fonctions qui constituent le syntagme global V NP INF mettent en rapport des personnes morphologiques

intra-verbales et intra-nominale, ce qui justifie le terme "morpho-syntaxique" dans le titre de cette communication.[12]

En ce qui regarde les groupes (1), (3) et (4), il convient de noter que la psychomécanique ne donne pas aux contre-exemples la même importance qu'une grammaire générative. Préoccupée avant tout de décrire et d'expliquer ce qui est, elle se désintéresse sans doute trop de ce qui n'existe pas et ignore notamment l'aspect "sur-génération". Pour combler cette lacune, au niveau descriptif tout au moins, il suffit de prévoir dans le lexique des sortes de règles de sous-catégorisation spécifiant pour une entrée lexicale — ou une sous-classe — particulière les constructions permises, ces règles pouvant varier, et même s'inverser (cf. (3) et (4)), d'une langue à l'autre.

4. CONCLUSIONS

Les deux hypothèses transformationnelles se fondent sur un point de départ contestable : le statut de sujet attribué au NP agent de l'infinitif. A partir de là, tout s'enchaîne : le complément infinitif forme une $\overline{S}$, la condition de barrage interdit à propos les phrases agrammaticales, mais aussi les phrases bien formées pour lesquelles on conçoit diverses procédures d'exception, toutes de plausibilité faible. S'en tenant d'abord aux seules phrases grammaticales, l'hypothèse psychomécanique regarde d'emblée la séquence NP INF comme la juxtaposition de deux constituants de V, respectivement objet et attribut de l'objet, et confie ensuite au lexique le soin de fixer très simplement l'extension de la construction. L'économie des moyens, l'absence d'a priori et de circularité, le soutien de la sémiologie morphologique et syntaxique lui confèrent un avantage décisif.

NOTES

1. Le résultat du déplacement à gauche de l'agent est correct : Krista que John croit avoir tort. Quelques verbes anglais admettent les deux tours de (3) : I want (her) to stay (cf. prefer, like).
2. Cf. Kayne (1981, 360).
3. Cf. Chomsky (1973).
4. Pour une définition plus précise de la relation de gouvernement, cf. Radford (1981, 319).
5. Cf. Chomsky (1980a, 25).
6. Le recours à l'effacement dans les Pisa Lectures m'est connu par Radford (1981, 330). Kayne n'en fait pas état, mais le signale dans Rouveret et Vergnaud (1980).
7. L'éventualité d'une structure V NP VP(infinitif) pour l'anglais (cf. Bresnan (1978)) et le français est écartée par Kayne (1981, 357-358) sur la base d'une argumentation assez fragile : a) si

(3b) avait la structure V NP, il s'agirait du seul cas où un objet doit être déplacé à gauche pour être licite (cf. note 1); b) l'incompatibilité entre gouvernement d'une position et contrôle de cette position — cf. le contraste entre (3) et (4) — dans la théorie de Chomsky plaide en faveur de VS.

8. Qui croit-il avoir tort? et Krista que John croit avoir tort s'expliquent par une application cyclique de Mouvement de qu- (cf. Kayne (1981, 357-358)). Kayne précise dans un appendice (367) que COMP ϕ n'assigne pas le cas lui-même, mais sert de pont entre le sujet enchâssé et le verbe de la matrice, véritable gouverneur.

9. Le commentaire de Radford (1981, 331) est très indulgent : "it may be that certains facts of language are so idiosyncratic and unpredictable that it is not possible to provide a principled (noncircular) account of them."

10. Comme le remarque Kayne, S ne garantit pas le gouvernement : *Marie a fait Jean partir.

11. Un texte antérieur inédit de Guillaume (Leçon du 24 février 1939, 25-27 ms) dénote encore un certain flottement; dans : J'ai entendu Pierre chanter, Pierre chanter forme un groupe qui remplit la fonction objet, sous laquelle Pierre, "par médiation" (?), devient le sujet de chanter.

12. Cf. Le Flem (1981, 6 et 7) où se trouve également défendue la thèse de l'objet apport au verbe. Curat (1982, 11.2) arrive à la même conclusion pour (3b), mais juge qu'elle disconvient à : Krista a laissé attaquer les chiens et Krista a laissé attaquer l'employé, pour lesquelles il pose l'amalgame de V-INF en un seul constituant. Les minces indices qui étaient sa décision ne justifient pas cette différence de traitement.

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FREEDOM, BONDAGE, AND THE MORPHOLOGY/SYNTAX DISTINCTION

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In recent years, especially under the influence of the transformational-generative approach, it has become fashionable to assert the centrality of syntax in linguistic structure, as do many (just to cite a few examples) from Chomsky (1957, 1965, and a good many other works), Fillmore (1968) and Botha (1968) to Pepicello (1980:109), etc., as well as the many papers in such journals as *Syntax and Semantics*. This emphasis on syntax has led even some non-transformationalists (e.g. Tesnière [1959]) to down-grade the importance of morphology, treating it as a merely accessory, almost accidental expression of one aspect of syntactic relationships. (Cf. Tesnière's statement [1959:36) 'la morphologie est essentiellement et uniquement l'étude des marquants'.) It seems to me that this approach confuses three distinct phenomena: (1) the relationships among linguistic elements themselves; (2) the correlations between the linguistic elements and real-life phenomena; and (3) the relationships among the real-life phenomena. In other words, it confuses (1) linguistic structures, (2) their meanings, and (3) the complex world in which we live.

To hold these three apart, we must first recognize that there is more to linguistic structure than syntax. Linguistic forms, i.e. meaningful sequences of structural units of sound (phonemes, to use a term which is somewhat out of fashion these days) occur on more than one "level," and on at least the "levels" of inflection, derivation, the phrase, and the clause. (By "level," I refer, not to a figurative visual presentation in the two-dimensional vertical plane, but to a distinction in the length of actual time taken by a speaker in the utterance of a linguistic form or sequence of forms; cf. Hall [1983].) Some forms, on each of these "levels," occur independently; they are "free," in the well-known term of Bloomfield (1933:160), or are *des mots francs*, as they were called by Damourette and Pichon (1927:49). Other forms do not normally occur alone, i.e. they are "bound" in Bloomfieldian terms, or are *des mots serfs* à la Damourette et Pichon. The distinction between freedom and bondage of forms is valid for at least the Indo-European, Finno-Ugric and Semitic languages, and undoubtedly for many others as well; whether it constitutes a linguistic universal or not, I don't know.

We must, however, go well beyond a simple re-affirmation of the value of this distinction. For decades, ever since Hall (1946), I have been insisting that we must recognize the phenome-

non of bondage on all "levels" of structure. As for the inflectionally and derivationally bound forms, every-one recognizes their existence and their essential function in defining form-classes. Time-worn examples are such English inflectional elements as the noun-plural suffix /-əz -z -s/ (written *-es -s*) and the verbal past-suffix /-əd -d -t/ (written *-ed -d -t*); and such derivational elements as /ˈdəm/ *-dom*, as in *wisdom, moviedom, star-dom, Nazidom,* etc. (cf. Wentworth [1941]). Other elements are PHRASALLY bound, i.e. occur normally only with phrases (including single free forms used as phrases); and still others may be PREDICATIVELY or CLAUSALLY bound. Clear examples of phrasally bound forms are most prepositions in the Romance languages, such as Italian and Spanish *con* 'with'; of a predicatively bound form, the predicate-marker *i-* in Tok Pisin (cf. Hall [1943:§2.14]); of clausally bound forms, most subordinating conjunctions, e.g. English *if*, French and Spanish *si* 'if', and Italian *se* 'if'.

Failure to recognize the existence of bondage on levels other than the inflectional and derivational has led to wide-spread errors in analysis and formulation. An example which comes immediately to mind is the Modern English possessive suffix /əz z s/ written *'s*. Because, in more conservative Indo-European languages, the elements indicating possession are inflectionally bound, it is customary to present this Modern English suffix in the same light. To do so, however, presents a problem when dealing with phrases like *The Lord Mayor of London's show* or *the man I saw telling you about yesterday's daughter*. Grammarians usually slide over this problem, either by calling *'s* an inflectional ending (as does Francis [1958:238-239]) and not mentioning its use with phrases, or by calling it an "exception" of one kind or another (e.g. a "group genitive", as do Quirk et al. [1973:§4.102], but still considering the genitive a "case"). This construction is best dealt with, however, by recognizing that the possessive suffix written *'s* is bound on the level of the noun-phrase, so that it can be attached to either a single noun functioning as a phrase (e.g. *John's*), or a sequence of elements with a noun as its head, as in the examples given above (cf. also Bloomfield [1933:178-179]). Similarly, such elements as the unstressed clitic pronouns in the Romance languages, both pronouns (e.g. French /mə tə sə/ *me te se* etc.), pro-phrases (e.g. French /i/ *y* and /ãⁿ/ *en*) and pro-predicative-complements (e.g. French /lə/ *le* invariable) are bound on the level of the verbal phrase, and constitute, together with the verb itself, what I have elsewhere (Hall [1948:§4.231]) termed a VERBAL CORE.

This last example leads to a further observation: that what is bound or free is not necessarily a morpheme. It can be an allomorph, with one or two other allomorphs being free forms. In French, for instance, the first person singular pronoun has two bound allomorphs, /ž(ə)/ *je* or *j'* and /m(ə)/ *me* or *m'*, and one free allomorph, /mwa/ *moi* — and similarly for the second person singular and the third person singular and plural pronouns. Nor

does parallelism necessarily have to prevail through a whole paradigmatic set, as shown by the first and second person plural pronouns /nu^z/ *nous* and /vu^z/ *vous*. In these latter, the occurrence of the bound allomorphs /nuz/ and /vuz/ is correlated exclusively with the phonological environment, and not (as in the case of the others) with stress and syntactic emphasis.

Among the factors conditioning bondage — and therefore enabling us to identify bound forms — phonetic stress is one of the most important. In Tok Pisin, the absence of stress is what characterizes the verbal suffix *-im* and the adjectival and pronominal suffixes *-fela*, and the predicate-marker *i-* (Hall [1943:§2.1]). In Spanish, the difference between a noun-compound and a noun-phrase lies in stress. In the latter type of combination, we find two full stresses, as in the proper name /martímpéṇa/ *Martín Peña*, whereas in the former the first element has weak stress and only the second has full stress, as in the (apparently) homophonous Puerto Rican place-name /martimpéṇa/, also written (wrongly) *Martín Peña*. If we take this phenomenon into consideration, we see that what is usually presented as an adverb-forming suffix, /mẽnte/ *-mente*, is in reality a separate element in a noun-phrase, as in /berdadéramẽnte/ 'truly', written (again wrongly) *verdaderamente*.

The validity of the reformulation proposed here is proven by the (apparently, but not really) anomalous occurrence of two or more Spanish adjectives followed by /mẽnte/ in a single phrase, e.g. /sábiaidiskrétamẽnte/ 'wisely and discreetly' — written (again wrongly) *sabia y discretamente*. This observation, in its turn, enables us to make a better distinction, in historical Romance linguistics, than has been made heretofore between languages like Modern French and Modern Italian, in which the element coming from PRom. /mẽnte/ 'mind' (Fr. /$^+$mã/ *-ment*, It. /$^+$mènte/ *-mente*) has become a true adverb-forming suffix, as opposed to Modern Spanish (and also Old French and Old Italian; cf. Bourciez 1910 [1967^5] §241.b), in which it has retained its independence as a noun, not a suffix. It may be argued that this is a distinction in "outer," not in "inner" form; but it is precisely the former type of form which makes for differences among languages, which are the proper concern of the linguist.

The distinction between free and bound forms is, therefore, important for our consideration of such questions as that of the "word" as a linguistic universal, for the definition of the "word" in any given language, and for our comparison of the typology of different languages. It is a commonplace to point out that, say, Modern French has a much smaller proportion of free forms than do either its more conservative cognate languages in the Romance family, or other Indo-European language-families such as the Germanic. In such a French utterance as /iladi kəžənlɥiãnavèpazãkorparle^/, written *il a dit que je ne lui en avais pas encore parlé* 'he said that I hadn't yet spoken to him about it',

the elements are written separately in standard orthography as if there were twelve independent "words." In reality, however, only three are free, the two past participles /di^{t}/ *dit* 'said' and /parle^/ *parlé* 'spoken', and the adverb /ãkor/ *encore* 'yet'. All the others are bound. This contrasts sharply with the corresponding English sentence, in which every one of the elements except /ðət/ *that* and /ənt/ *-n't* can, on occasion, occur alone. This characteristic of French utterances is, in its turn, conditioned by the fact that the breath-group, in Modern French, is the normal unit of utterance, so that, in the sentence just cited, there are at most two breath-groups. Hence, if we wish to use the term WORD at all in discussing Modern French structure, it has to be in quite a different sense from that in which we apply it to, say, Italian or English (cf. Delattre [1940]).

I present these observations primarily to point out once more what has, unfortunately, been widely lost sight of in recent years, namely that linguistic structure is not merely a bundle of abstract relationships (as emphasized, indeed over-emphasized in Hjelmslevian and Chomskyan doctrine). It includes also sound as raw material, functional units of sound, and of course individual linguistic forms, functional units of form, and combinations thereof. Often, at least, it is necessary to know what are the forms before we describe their combinations; but to identify the forms and their classes, we must know which can occur alone and which cannot. Our task as linguists is to identify, analyse, and describe all these elements and the relations among them, their meanings, and their functioning in human society, without ascribing absolute priority to any of these aspects, and recognizing that our work may, at any given point, proceed in any "direction" as required by the material in hand.

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SOME UNIVERSAL ASPECTS OF ADJECTIVE ORDER: A FUNCTIONAL PERSPECTIVE ON DETERMINATION

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1. Introduction

One of the fundamental problems confronting linguistic theory is to determine to the extent that it is possible the ways in which languages differ from one another and yet also share common properties. Those putative common properties may be of several different kinds. One type of universal could be a constraint in the form: no language L will have a rule R or structure S of the form x where x specifies the content of such a constraint. Another familiar universal is the implicational one: the presence of x in a language implies the presence of y. The universals of word order investigated since Greenberg's seminal paper (1966) have more often than not been of this second type. Another possible distinction may be between functional and structural universals. In addition to the common structural properties cited above languages may differ considerably in their structure and at the same time use those structures to carry out similar or identical functions. It is this similarity and/or identity of function that often allows linguists the possibility of comparing languages with greatly differing structures.

The notion of functional equivalence among languages plays an important role in this paper as well as in the theoretical framework developed by Hans Jakob Seiler and colleagues at the University of Cologne, Germany. The purpose of this paper is to investigate the semantics and syntax (primarily constituent order) of Noun Phrase (NP) determination by surveying NP structures in a few selected languages of diverse genetic and typological affiliation. The focus of the paper is on extended Adjective (ADJ) orderings in NPs (e.g. the beautiful big red ball). The sample is drawn from Japanese (Eastern Altaic), Modern Greek (Indo-European), Thai (Kam-Thai), Ewe and Twi (Kwa) and Finnish (Finno-Ugric).

The theoretical framework developed by Hans Jakob Seiler and colleagues is a functional approach to language universals which seeks universals of human language not so much in the formal structures of languages as in possible functional equivalences which may be formally expressed in a variety of ways. A functional approach to NP determination investigates formal structures as a means to discovering what functions are performed by those structures. For the purposes of this paper a function is conceived as a communicative task which the speaker attempts to accomplish. Obviously there are many communicative tasks

which are not dealt with here but it is possible to give an example with which this paper is concerned. Specification is a function which grammar carries out in the languages of the world. Specification is the further narrowing down of a referent so that the hearer (or reader) may be able to identify the referent. Characterization is another function which is operative in languages. Characterization is the complement of specification because it assumes that the referent which will be characterized has already been identified. Characterization then expands the hearer's knowledge of the referent by ascribing new information to it. These two functional notions go a long way toward explaining the purposes of various grammatical phenomena. The distinction, for example, between restrictive and non-restrictive relative clauses in English serves to manifest these two functions. The restrictive relative clause specifies the head noun more clearly so that identification may be made by the hearer. The non-restrictive relative clause, on the other hand, serves to explain the referent of the head noun more fully and add information which was not previously known.

2. Noun Phrases: Some Selected Research

Given the general program of universals research developed by Seiler *et al.*, a number of papers at the 1976 Gummersbach/Cologne Conference on Language Universals treated various aspects of NP structure. Seiler's paper (1978) dealt with problems of constituent order in extended NPs in German in an attempt to discover what universal aspects of determination are reflected in this particular language. On the basis of the example in (1) Seiler makes a number of important formulations:

(1) alle diese meine erwähnten zehn schönen roten
all these mine mentioned-before ten pretty red

hölzernen Kugeln
wooden balls

Two complementary principles are that the scope of a determiner increases with greater distance from the head noun and that those properties implied in the concept of the head noun tend to stand closer to the head noun. Seiler concludes that German depends heavily on word order to carry out the function of determination.

Heine (1980) attempted to extend Seiler's analysis of German to non-Indo-European languages. He selected seven East African languages representing three of the four major language families found in Africa. The languages also represented typologically diverse structures in basic word order (VSO, SVO and SOV). Since they all are spoken in Kenya, however, they share a number of areal characteristics. Perhaps the most prominent feature relevant to our purposes here is that despite the differences in the basic word order types, they all have postnominal

determination of ADJs and RCs. One will recall that often prenominal determination is characteristic of SOV languages (e.g. Japanese). Heine discovered that these languages allowed greater variation of word order than German does but that a distinction of unmarked vs. marked orders could be made in order to isolate one order as more neutral. Heine found also evidence of a continuum linking the principle of specification with that of characterization (1980:186) that Seiler had found in German.

Hetzron (1978) addressed the problem of the relative order of ADJs and claimed that "the linear order of several cooccurring members of the ADJ class will, in many languages, be determined by semantic criteria, based on a subdivision of the adjectives as qualifiers of different types" (1978:166). Hetzron found that regardless of typological structure (of the order of elements) of the language in general, the class meaning of ADJs determined their order. He considered only three ADJ subcategories (EVALUATION, SIZE, COLOR) but among these types his principal seems to hold. Thus in a ADJ-N language like English or Hungarian, the order is as follows:

(2) egy szep nagy piros labda (Hungarian)
a beautiful big red ball (English)

This same order holds for the other ADJ-N languages which he considered; German, Polish, Turkish, Hindi. In N-ADJ languages he found the mirror image order:

(3) tupe qermeze bozorge qasangi (Persian)
ball red big beautiful

(4) etxe zuri txiki polit bat (Basque)
house white little pretty a

Thus, what is important is the relative distance from the N. For languages which place the N between two ADJs like French we find that principle is not violated,

(5) un joli gros ballon rouge (French)
a pretty big ball red

*gros joli

although the relative distance of gros and rouge cannot be ascertained. The final contribution of Hetzron's article is related to Seiler's continuum of determination. Hetzron found as he examined English and Hungarian that "the major rule is to place the more objective and undisputable qualifications closer to the noun, and the more subjective, opinion like ones farther away" (1978:178).

The questions of this previous research set the background for the survey of languages in section 3. First, the task is to discover what is the normal (unmarked) order in NPs with

different types of ADJs such as SIZE, COLOR, MATERIAL and EVALUATIVE ADJs. At the same time the normal order of other NP constituents like quantifiers, demonstratives and numerals is also considered. By normal order is meant what the informants intuited as the most natural order, free from any special emphasis on one particular constituent. If one such order could not be established, that was noted. A second question dealt with is the extent to which variation was possible and what semantic differences, if any, accompanied that variation of order. Third, is it possible to state some constraints on variation among determiners which holds for the languages already investigated as well as for those examined in this study?

3. Survey of Languages With Regard to NP Structures

The data are presented here language by language so that an impression of each language's NP structure can be obtained. A discussion focusing on cross-linguistic similarities and differences follows the survey.

3.1 Japanese

Japanese is a verb-final language with postpositions and genitives before nouns. In keeping with that it places its ADJs before its N. In fact, according to Kuno (1978) all descriptive ADJs, DEMs, NUMs and relative clauses precede their head nouns. This is consistent with Greenberg's Universal No. 19. When the general rule is that the descriptive adjective follows, there may be a minority of adjectives which usually precede but when the general rule is that descriptive adjectives precede, there are no exceptions. The data on Japanese NP structure are consistent with this pattern.

(6) a Watashi no mitsu no ooki na midori iro no kudamono
I POSS three POSS big green color POSS fruit
'my three big green fruits'

b watashi no ooki na midori iro no kudamono mitsu zembu
POSS SIZE COLOR NOUN
*zembu mitsu

c watashi no midori no mitsu no ooki na iro no kudamono
(mitsu no midorino)
POSS COLOR NUM SIZE COLOR NOUN
(NUM COLOR)

*d mitsu no ooki na midori iro no kudamono watashi no
NUM POSS SIZE COLOR POSS NOUN POSS

(7) mitsu no ooki na midori iro no ki no taburu
three POSS big POSS green color POSS wooden POSS table

These data show that ADJ is consistent with the order in English with the order NUM + SIZE + COLOR + N. The variations show, however, that the order is not tightly restricted as in German. There does not seem to be any emphasis contrast for the different variations. 6c shows that COLOR, SIZE, and NUM can vary in order but according to my informant a material adjective cannot be separated from the head noun. Thus in 7 ki no taburu 'wooden table' cannot be separated or vary in order. I shall discuss this point further in the cross-linguistic survey.

3.2 Modern Greek (demotic)

Modern Greek (MG) is an SVO language of the Indo-European family. Generally speaking, Greek has a NOUN-ADJ order but the data below show that the situation is not as simple as that.

(8) a afto to vivlio
this the book
'this book'

b to vivlio afto

c *to afto vivlio

d *afto vivlio

(9) a afto to kalo vivlio
this the good book
'this good book'

b afto to vivlio to kalo

c to vivlio afto to kalo

d to vivlio to kalo afto

e to kalo afto vivlio

f to kalo vivlio afto

(10) a ola afta ta meγala kokina ksilina trapezya
all these the big red wooden tables
'all these big red wooden tables'

b ta trapezya ola afta ta ksilina

MG evidences considerable variation in order among NP constituents. It seems from the data that it permits both N-ADJ and ADJ-N orders. There are some important restrictions, however. When the ADJ precedes the N, it follows the English pattern (e.g. 9a). But when it is dislocated from this position it must

be preceded by the definite article (e.g. compare 9a and 9b). MG differs from English and German with regard to the relation of the DEM and the ART. In both English and German these are mutually exclusive (the book or this book but not this the book) whereas in MG when the DEM afto is used, the article to must also be used (but not vice versa). Notice too, the order must be DEM + ART + (ADJ) + N and cannot be ART + DEM + N. Regarding variation, the ADJs can come in any order without any necessary emphasis placed on any one constituent. One restriction does seem to hold. MATERIAL ADJs must be adjacent to the head N if it precedes (e.g. 10a) but not if it follows.

3.3 Thai

Thai is an SVO language with N-ADJ order. It has phonemic tones (5) but that is not relevant for our purposes here. Thai has no definite or indefinite articles but does have a classifier (CL) system for its Ns which shows up in the data but has little or no bearing on the problem which concerns us.

(11) baan thii saang duəy hIn yuu thii nan
house which built with stone is at that
'the house which is built with stone is over there'

(12) baan hIn
house stone

(13)* baan lang yai hIn
house CL big stone

(14) baan yai saam lang (nan) siidæng
house big three CL these red
(opt)
'these three big red houses'

(15) baan siidæng saam lang nan yai
house COLOR NUM CL these SIZE
(obl)
'these three big red houses'

(16)* baan saam siidæng
house three red

(17)* baan siidæng yai saam
house red big three

(18)* tIk suəy sung siidæng
building beautiful tall red

(19)* tIk siidæng sung suəy
building red tall beautiful

(20) to mai siidæng nan yai
table wooden red this big
'this big red wooden table'

(21) kæw kradaat siikao nan yai
cup paper white this big
'this big white paper cup'

What follows here are comments concerning the structure and meaning of various examples. No. 11 contains a relative clause and is used when the speaker wants the hearer to know that the house is made of stone. No. 12 is used when the speaker assumes that the hearer already knows this fact. With regard to order, No. 14 was judged by my informant to be the more normal order while No. 15 is possible but somewhat awkward. Nos. 20 and 21 contain MATERIAL ADJs where such ADJs must be immediately adjacent to the head N. Any violation of this order is not possible. This is consistent with the structure of Japanese and Modern Greek. No. 13 is ungrammatical for this reason. Nos. 16, 17, 18 and 19 are ungrammatical because when more than one ADJ is in the NP, the DEM nan this/these is obligatory. But No. 18 is also wrong because it is an order violation. Apparently, if an EVALUATIVE ADJ like suəy 'beautiful' is used, it cannot stand closer to the noun than other ADJs.

3.4 Ewe

Ewe is an SVO language of the Kwa group in the Niger-Congo family and is primarily spoken in Ghana. It has N-ADJ and post-nominal relative clauses. Some of its other features are phonemic vowel length, double-articulated consonants (e.g. kp, mɲ) and distinctive tones. It has two forms of the definite article. la occurs (no. 1) when the structure is N + ART but -a- appears as a suffix on the numeral.

(22) awu dɔ́ yɛyɛ ɛvɛ- a -wo
shirt red new two ART-PL
'the two new red shirts'

(23) awu ga dɔ́ yɛyɛ ɛvɛ- a -wo
shirt big red new two-ART-PL

(24) awu yɛyɛ ga dɔ́ ɛvɛ- a -wo
shirt new big red two-ART-PL

(25)* awu yɛyɛ dɔ́ ga ɛvɛ- a -wo
shirt new red big two-ART-PL

(26)* awu ɛvɛ-a-wo ga ɛyɛ dɔ́

(27)* awu wo ɛvɛ ga dɔ́

(28) aŋə kotoku
plastic bag

(29)* kotoku aŋə

(30) aŋə kotoku yɛyɛ
plastic bag new
'new plastic bag'

(31) agabale kotoku
paper bag
'paper bag'

(32)* kotoku gbale

Among ADJs some variation is possible:

N-COLOR-AGE-NUM	no. 22
N-SIZE-COLOR-AGE-NUM	no. 23
N-AGE-SIZE-COLOR-NUM	no. 24
but not	
*N-AGE-COLOR-SIZE-NUM	no. 25

It seems the ungrammaticality of No. 25 is due to the SIZE ADJ being placed last in the string of ADJs. The ungrammaticality of Nos. 26 and 27 is because the NUM must always be last in an NP. In addition No. 27 breaks up a phonological word and thus has a further violation.

One of the most striking features is the way MATERIAL ADJs are treated. MATERIAL ADJs precede and cannot follow (compare No. 28 with No. 29 and No. 31 with No. 32). In keeping with what we have seen before, these languages tend to treat MATERIAL ADJs somewhat differently than other ADJs.

3.5 Twi

Twi is also an SVO language of the Kwa group. It has phonemic tones and has strict N-ADJ order. The general structure of complex NPs is:

N + ADJ + NUM + ART + QUAN

(33) agua ketewa baako yi
chair small one the
'the one small chair'

(34) agua ketewa kɔkɔ baako yi
chair small red one the
'the one small red chair'

(35) mbofa kekewa miensa no uyinaa
children small three the all
'all the three small children'

(36) bɔl kɔkɔ kɛse fɛfɛ mienu no
ball red big beautiful two the
'the two beautiful big red balls'

According to my informant the ADJs cannot be changed in order nor can any of the other elements. Unfortunately, I could not obtain information about MATERIAL ADJs. It is interesting that the order (although reversed) matches very closely the order for German NPs.

3.6 Finnish

Finnish is an SVO language of the Finno-Ugric branch of Uralic. Like English it has ADJ-N order. Unfortunately my data here is not as complete as I would like but these data do mirror some of the same tendencies observed in earlier studies.

(37) iso pallo
big ball
'the big ball'

(38) iso punainen pallo
big red ball
'a/the big red ball'

(39) kolme isoa punaista palloa
three big red balls
'three big red balls'

(40) nänä minun kolme punaista palloani
these my+gen. three red+part ball+poss
'these three red balls of mine'

(41) a kaikki nämä pallot
all these balls
b nämä kaikki pallot

Finnish does not have definite or indefinite articles. Nos. 37 and 38 are in the nominative case. When a NUM is used, however, the ADJs and N must be in the partitive singular (as in No. 39). No. 41a is the normal order and 41b is the less usual order for this construction.

4. Cross-linguistic Results

In this final section of the paper I wish to make some comparisons between the languages in section 3 and seek to relate this information to previous research in this area. One obvious

difference between the languages considered and German is that there is much more variability of order in these languages. As an example, Modern Greek allows ADJs to precede or follow and allows a great variation of order among the ADJs.

Modern Greek leads us to a second point. Most speakers can distinguish between normal and unusual orders in many languages. Greek also reflects these intuitions in its syntactic treatment of ADJs. When the ADJ(s) precede, only one article is needed and the ADJ(s) must occur between the article and the N. But when the ADJs follow, the article must be repeated before each ADJ. These formal markings reflect the intuitions of my informant that the latter type of structure is more marked.

Perhaps one of the most striking corroborating points with previous research has to do with MATERIAL ADJs. In the case of Standard German, Seiler claimed that hölzern 'wooden' was placed next to the N, Kugel 'ball' because it was an inherent quality in that particular N. Likewise, Hetzron argued for a semantic principle which placed the more objective ADJs closer to the head N while the more subjective and disputable ADJs were farther away. A case of confirmation, cross-linguistically, is the way that the languages in the sample treat MATERIAL ADJs. Japanese does not allow MATERIAL ADJs to be separated from the head N, unlike other categories such as COLOR and SIZE. Similarly, Ewe singles out MATERIAL ADJs by not allowing them to be separated from the N and by placing them before Ns whereas all other ADJs must follow. It is possible that in some languages the total unit like Ki no taburu 'wooden table' (Japanese) could be considered as compound Ns. My concern is not to argue about whether MATERIAL attributions fall into an ADJ class within each language but to draw attention to the fact that many languages treat MATERIAL ATTRIBUTIONS in a special way in their syntaxes. In the case of Japanese, by not allowing variability like the other ADJs; in Ewe by a difference of word order. Most languages have a propensity to keep MATERIAL attributions close to, if not immediately adjacent to the head N. Modern Greek is a case in point. It was noted in 3.2 that Greek has considerable variation of order but that the more unmarked order was the one where the ADJs preceded the N. If the ADJs follow the N, the article must be repeated. A comparison of 10a and 10b of section 3.2 reveals that if the MATERIAL ADJ precedes, it must be next to the N (10a); if the ADJ follows, it (with the article) can be separated. Thus the constraint on MATERIAL ADJs to keep them adjacent to the head N is not an absolute one in Greek like it is in Japanese or Ewe but given a certain previous decision on the part of the speaker to construct the NP in a certain order, a constraint similar to the other languages applies.

If the languages treated here manifest a tendency to place MATERIAL ADJs adjacent to the N, they equally manifest a tendency to keep EVALUATIVE ADJs away from the head N. This is, of course, completely consistent with Hetzron's observations that the more subjective ADJs are placed a greater distance from the head N. In his sample both ADJ-N and N-ADJ languages placed the

ADJ meaning 'beautiful' farthest away. In our sample, Twi reflects the same order (3.5 No. 36). Thai also shows this tendency very strongly. When EVALUATIVE ADJs occur with SIZE and COLOR ADJs, the EVALUATIVE suəy 'beautiful' occurs last. The violation of No. 18 is (at least partially) a violation of placing the EVALUATIVE ADJ next to the head N.

5. Concluding Remarks

The picture which emerges from this cross-linguistic study is that while there are clearly language-particular rules which determine the differing syntactic treatments of types of adjectives, these syntaxes have in common that they make distinctions between material adjectives and other types of adjectives such as evaluative and (sometimes) color adjectives. Thus we have seen that superficial differences in syntax nevertheless operate on an underlying semantic regularity which may ultimately be related to a universal distinction between inherent and non-inherent qualities of a referent. In any case, investigation into this domain of linguistic structure on the basis of a wider diversity of language types and deeper study of language particular structures seems justified and welcome.

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L'INDICATIF APRÈS BIEN QUE ET QUOIQUE

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1. *Introduction*

La communication présentée ici s'inscrit dans le cadre d'une étude qui s'amorce sur la langue de la presse écrite au Québec. On s'intéressera plus particulièrement au cas de la variation modale dans les propositions subordonnées à valeur concessive, consécutive et finale, ainsi qu'après des verbes qui permettent l'apparition du phénomène.

Le choix de ce champ de recherche relève de trois types de préoccupations: 1) une curiosité à l'égard des faits de grammaire dans le corpus déterminé, 2) une intuition à vérifier sur l'importance des facteurs purement discursifs dans le jeu de la variation modale, 3) des interrogations sur les postulats de la Systématique du langage du linguiste français Gustave Guillaume, confrontée à des faits complexes de discours.

2. *Objet de la communication*

Le texte qui suit porte principalement sur le premier point. Il s'agit d'établir le caractère significatif de la variation subjonctif/indicatif après *bien que* et *quoique*, locutions qui commandent normalement l'emploi du subjonctif. Les exemples seront classés et analysés sommairement. Cette pré-enquête permettra de conclure à la nécessité d'introduire des variables relatives à la situation socio-géographique des publications examinées ainsi qu'à celle des auteurs des articles.

3. *Corpus*

Les faits de variation modale sont tirés du dépouillement de journaux et d'une revue du Québec. Ils sont comparés à des textes français, aux fins de l'analyse différentielle. Du côté québécois, ont été retenus les seuls articles pour lesquels il était possible de connaître l'identité de l'auteur. Les dépêches d'agences de presse internationales et de l'agence canadienne ont été systématiquement rejetées.

3.1 *Textes québécois*

Le Soleil, quotidien de la ville et de la région de Québec, 54 numéros, du 8.01.83 au 11.03.83.

Le Devoir, quotidien de la ville de Montréal, distribué dans tout le Québec, 54 numéros, du 5.01.83 au 8.03.83.
L'Actualité, mensuel, distribué dans tout le Québec, 12 numéros, année 1981.

3.2 *Textes français*

France-Soir, quotidien, 27 numéros, décembre 1982.
L'Express, hebdomadaire, 27 numéros, 1.01.78 au 2.07.78.

4. *Les données*

Les cas d'emplois classés comme indicatifs sont, exclusivement, ceux qui présentent une variation graphique (Ex. *est/soit*). Toutes les autres occurrences sont considérées comme des subjonctifs.

4.1 *BIEN QUE*

Le Soleil

	Présent	Passé	Total	%
Subjonctif	56	24	80	68,75

	Présent	Imparfait	Passé simple	Passé composé		
Indicatif	3	9	1	1		
	Conditionnel	Futur	Passé ant.	P.q.p.	Total	%
	3	5	2	1	25	31,25

Le Devoir

	Présent	Passé	Total	%
Subjonctif	36	11	47	92,42

	Présent	Passé simple	Total	%
Indicatif	2	1	3	6,38

L'Actualité

	Présent	Passé	Total	%
Subjonctif	13	3	16	100

Indicatif: aucun emploi.

Dans les journaux français, on ne relève, pour la période considérée, aucun emploi de l'indicatif. La répartition entre les temps du subjonctif est ce qui suit:

France Soir

	Présent	Passé	Imparfait	Total	%
Subjonctif	24	16	1	41	100

L'Express

	Présent	Passé	Imparfait	P.q.p.	Total	%
Subjonctif	36	15	3	1	55	100

4.2 *QUOIQUE*

Le Soleil

	Présent	Total
Subjonctif	2	2

	Présent	Futur	Imparfait	Passé composé	Total
Indicatif	2	1	1	1	5

Le Devoir

	Présent	Passé	Total
Subjonctif	7	1	8

	Présent	Imparfait	Passé composé	Total
Indicatif	1	1	1	3

L'Actualité

	Présent	Total
Subjonctif	2	2

Indicatif: aucun emploi.

France Soir

Aucun emploi de *quoique*.

L'Express

	Présent	Passé	Total
Subjonctif	4	1	5

Indicatif: aucun emploi.

Les données reproduites dans ces tableaux sont trop fragmentaires pour qu'il soit possible de tirer des conclusions définitives. Cependant, elles permettent de déterminer les orientations de la recherche sur la presse écrite.

5. *Etablissement du caractère significatif global de la variation*

Deux points de vue peuvent être envisagés ici. Au plan de l'étude quantitative, seul le journal *Le Soleil* révèle une proportion appréciable d'emplois de l'indicatif. Néanmoins, l'ajout des quelques cas du quotidien *Le Devoir* conduit à poser la différence entre la presse écrite au Québec et celle de France. Cette dernière est d'ailleurs évidente avec *quoique*.

En outre, les faits font ressortir un usage variable au Québec même. L'opposition, à cet égard, du *Soleil* et du *Devoir* est toute aussi nette. Or le premier quotidien est imprimé à Québec et couvre une région bien délimitée, tandis que l'autre a une vocation nationale. Il y a lieu de supposer que tant le lieu de publication du journal que son aire de distribution a de l'importance. A l'enquête s'ajoutera plus tard un volet qui prendra en compte le public visé par la publication.

Au plan qualitatif, abstraction faite d'une explication historique, on constate dans *Le Soleil* une répartition dans l'emploi des temps qui montre que le phénomène prend les apparences d'une tendance. Il est difficile de tirer une conclusion analogue à propos du *Devoir* pour la raison évoquée plus haut, qui a trait au nombre d'occurrences.

6. *Analyse des exemples*

On s'en tiendra ici à l'analyse des seuls exemples du quotidien *Le Soleil* qui font suivre *bien que* de l'indicatif, leur nombre justifiant un regard d'ensemble. L'examen des contextes, dans le but de rechercher des facteurs susceptibles de commander l'emploi de l'un ou l'autre mode serait aisé à faire. Il suffirait de se reporter à Martinet (1979), par exemple, qui les

présente dans un ouvrage d'enseignement de la grammaire. Mais dans une étude portant sur la presse écrite, il nous est apparu nécessaire de chercher, au-delà de la matière contextuelle, celle-là même qui commande la perspective du discours.

Il s'agit de voir dans quelles conditions la définition typique de la concession se trouve contrariée. De cette dernière, Martin (1982, p. 28) donne une vue qui permet de bien situer le cadre de la variation, en faisant appel aux notions d'*univers de croyance*, "conçu comme l'ensemble virtuel des propositions qu'au moment où il parle le locuteur tient pour vraies", et d'*anti-univers*, défini "comme l'ensemble virtuel des propositions que le locuteur sait être fausses, mais dont il pense qu'elles auraient pu être vraies..."

Pour lui, dans une phrase comme *Pierre est parti, bien que Sophie soit revenue*, la vérité des deux propositions est posée, la deuxième étant même présupposée, puisqu'elle entre en relation dans l'univers du posé, avec la première, et dans l'anti-univers où elle produirait un effet inattendu au sein de la relation implicative.

On peut croire, dans ces conditions, que le mode évoque ce qui appartient à l'anti-univers. C'est ainsi qu'il faudrait interpréter l'usage normal du subjonctif, de même que celui, plus rare, mais présent, de manière constante, au cours de l'histoire, du conditionnel. Là, l'idée d'éventualité l'emporte autant dans l'univers de croyance que dans l'anti-univers:

(1) Bien que nous trouverions cet outil très pratique et utile... nous ne pouvons nous permettre une telle dépense pour l'instant.
(20.01.83, p. A-13)

(2) Le réseau anglais de Radio-Canada, la CBC, devrait abandonner ses émissions américaines pour les remplacer par des productions canadiennes bien que ce geste coûterait 52,6 millions au gouvernement.
(1.03.83, p. A-8)

La force de l'opposition est souvent atténuée, dans ce type d'opposition propositionnelle, de sorte qu'entre l'univers de croyance et l'anti-univers le conflit est moins marqué. La comparaison d'événements au futur, dans la presse, est un cas typique:

(3) Coburg sera d'ailleurs le théâtre de plusieurs grandes célébrations commémoratives en l'honneur de Martin Luther cette année, bien que Nuremberg sera probablement l'endroit où auront lieu les plus imposantes manifestations.
(22.01.83, p. H-2)

Mais le lieu privilégié de l'appel au futur est celui des paroles rapportées:

(4) M. Girard a clairement fait savoir que le FCSCQ était "dans les patates" et que les règles budgétaires, bien qu'elles seront modifiées après consultation auprès des commissions scolaires, tiendraient compte de l'application des décrets. (8.03.83, p. A-3)

La manifestation de l'anti-univers, par le biais d'une modalité différente, est annulée par celle, logiquement antérieure, de la visée déclarative.

On peut mettre sur le compte du type d'écrit considéré l'emploi de l'indicatif avec le passé simple ou le passé antérieur:

(5) Bien que quelques coups furent portés de part et d'autre, la majorité des manifestants s'est contentée d'invectiver les délégués. (11.03.83, p. A-10)

Dans la détermination du mode, c'est ici la nouvelle rapportée qui vient masquer la présence de la cause non agissante; encore que dans cet exemple, l'opposition entre les deux faits évoqués par les propositions est amenuisée. Cependant, la manifestation directe du fait, au détriment de la nuance oppositive, joue même là où le conflit est net:

(6) Bien qu'une requête en injonction provisoire lui eut été consentie du 24 janvier au 3 février, Jean Bernard, étudiant en communication au collège de Limoilou, n'a pris part à aucun match des Titans... (1.03.83, p. C-2)

Le conflit se résout parfois en faveur du présent ou du passé composé:

(7) Celui qui demeure encore le p'tit Simard dans le coeur de milliers de fans ne renie pas tout ce qu'il a été, bien qu'aujourd'hui, sa carrière a pris une toute autre tournure. (26.02.83, p. D-9)

(8) Les préoccupations face au décrets se situent surtout au secteur secondaire, bien qu'au primaire l'augmentation de deux heures par semaine du temps de présence des élèves ne fait pas présentement l'unanimité. (22.01.83, p. B-2)

Il est difficile de se prononcer sur la nature du facteur agissant

en (8). Les exemples manquent pour cerner le rapport entre l'opposition scalaire et le choix du mode. Ici encore, les propositions mises l'une en face de l'autre, confrontées, pourrait-on dire, sont évoquées au premier chef comme des faits dont l'auteur fait état et non pas dans un univers où l'une ne pourrait se défaire de l'emprise de sa contraire.

Ce qui frappe le plus à l'observation de ce petit corpus, c'est le recours fréquent à l'imparfait de l'indicatif. Il s'emploie en rapport avec, dans la principale, l'imparfait:

(9) Bien que les modalités de la conciliation n'étaient pas définitivement arrêtées hier soir, la CEQ semblait satisfaite de ce premier pas du gouvernement pour une reprise des pourparlers.
(8.03.83, p. A-1)

le passé composé:

(10) J'ai fui les voies rapides bien qu'elles étaient davantage dégagées de neige que les rues secondaires.
(22.01.83, p. C-4)

le présent:

(11) Bien que les premiers rapports signalaient que la galerie des boutiques avait été inondée, les faits sont tout autres.
(22.02.83, p. A-3)

(12) Une reprise prochaine de la grève générale dans le réseau hospitalier demeure toujours possible bien que les chances de réussite paraissaient très minces hier.
(3.02.83, p. A-1)

Trois exemples, sur les quatre cités ici, contiennent en contexte un indice situant nettement l'événement dans le passé: *hier soir* (9), *les premiers rapports* (11), *hier* (12). Cela pourrait donner à penser que la situation est tout simplement celle d'un refus de recourir au subjonctif imparfait et même au subjonctif passé, dont l'emploi se révèle aisé dans au moins deux des exemples. Or cette hypothèse est infirmée par deux occurrences où l'imparfait est justement coordonné à un subjonctif passé:

(13) Cette demande fait suite à une lettre datée du 19 janvier adressée à l'exécutif, dans laquelle M. Bisaillon annonce sa démission du Parti québécois, dont il demeurait toujours membre, bien qu'il ait quitté le caucus des députés du PQ le 21 juin dernier et siégeait depuis comme indépendant
(22.01.83, p. A-4)

(14) Bien que les écoles de la région étaient ouvertes ce matin et bien que les enseignants aient dressé des lignes de piquetage perméables, c'était encore la paralysie dans le secteur de l'enseignement.
(18.02.83, p. A-1)

Le caractère apparemment ponctuel d'un des deux événements pourrait expliquer le recours au subjonctif passé coordonné à un imparfait duratif. Cependant, l'exemple (11) infirme l'hypothèse ici fondée sur les rapports de durée concrète. L'imparfait intervient plutôt en "toile de fond", comme dans le cas de la relation causale, sur laquelle se fondent l'univers du posé et l'anti-univers, qui aurait pu produire l'effet attendu. L'usage de l'imparfait ne s'expliquerait pas ici, comme précédemment, par l'envahissement du fait relaté, contre son double dans l'anti-univers.

Il se peut que ce soit là une caractéristique de la presse écrite au Québec. La recherche est en cours et l'avenir permettra de vérifier l'hypothèse. Le mécanisme linguistique qui permet le recours à l'imparfait appelle à la réflexion. Là, tout est à faire.

Conclusions

Les conclusions sont provisoires, comme les analyses des données qui ont permis de les établir. Elles portent sur l'orientation que prendra l'étude d'ensemble sur la langue de la presse écrite.

1. La différence dans l'usage au Québec et en France est claire.
2. La vocation régionale ou nationale de la publication considérée a un impact certain sur la variation modale.
3. Les facteurs intervenant dans le choix du mode tiennent d'une part à la perspective adoptée dans le discours de presse, d'autre part aux mécanismes linguistiques sous-jacents à la définition des formes grammaticales.

D'autres variables, dans un corpus plus étendu, seront prises en compte: certains auteurs d'articles utilisent plus souvent l'indicatif; le type d'article (relation d'événements, éditorial, etc.) a sûrement son importance.

Ce qui ici se manifeste comme une tendance extra-normative, avec *bien que* et *quoique*, pourrait trouver un cadre explicatif convenant à d'autres cas de variation modale. C'est ainsi que l'étude privilégiera l'examen de l'alternance subjonctif/indicatif après les locutions conjonctives telles *encore que* pour la concession, *de façon que* pour la consécution et le but, de même que celle que permettent un certain nombre de verbes dont le repérage reste à faire.

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WHY LANGUAGES HAVE NO SENTENCES

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It seems to have been Wittgenstein, in the Tractatus, who first proposed to define a language as a set of sentences. The reason for such an approach is very simple: sentences are directly observable, since in normal human experience they can be heard vibrating on the air waves. For a logical positivist, of course, it is important to frame definitions in terms of the directly observable.

No matter how admirable it may be to base definitions on the directly observable, there are nevertheless very dangerous traps that one can fall into in following such a procedure. First of all one may end up as a victim of the naive assumption that all knowledge can be reduced to things that one can touch, hear and see, the existence and reality of which is uncritically assumed. A second trap is to conclude that what is not directly observable is unscientific, unknowable, or worse, does not "exist". This kind of simple minded reductionism leads to the third and worst trap, which is to force the data to fit the parameters created by one's metaphysical prejudices, so that instead of being examined scientifically the data is examined only through metaphysical blinkers.

It is to be regretted, therefore, that the definition of a language as a set of sentences was uncritically adopted by many linguists. It can be found in Bloomfield, for example, as early as 1926, where we find in the "Set of Postulates for the Science of Language" that he published in the second volume of Language the following (Definition 4): "The totality of utterances that can be made in a speech community is the language of that community." And although it is commonly accepted that Chomsky and his followers broke with the Bloomfieldian tradition, we find Chomsky writing (1957:13): "From now on I shall consider a language to be a set (finite or infinite) of sentences..." Nor is it only American linguists that follow this tradition, since we may quote from Lyons (1970:24): "...the language is the set of sentences generated by the grammar." We may take it, therefore, that this definition has considerable currency throughout the English speaking world.

The definition is nevertheless quite untenable, and will not stand even the most ordinary scrutiny. A child, for example, learns the language of his community, but in the process does not

learn "the totality of utterances that can be made in (his) community." We hear the child learning words and how to manipulate them; we do not hear him learning sentences. A foreign learner may also learn by heart many thousands of English sentences, without in any way mastering the English language. In short, the sentence is the product of linguistic activity; it is not the means of production. To confuse the product and the means of production is to confuse the sausage machine with the sausages. If, in some curious world the sausages were directly observable, and the sausage machine not, it would be no solution to describe the machine as "an infinite string of potential sausages."

If we examine a simple learner's method, in fact, we discover some rather striking figures on sentence productivity. The productivity of even a simple sentence such as

(1) The boy gives his book to a girl

is enormous. Given four definers, 10 nouns of persons, 40 nouns of inanimate objects, two possessive pronouns, five verbs, the learner is capable of making 1,920,000 sentences.

$$(4 \times 10 \times 5 \times 6 \times 40 \times 1 \times 4 \times 10) = 1{,}920{,}000$$

If, in the next lesson the past tense is learned, the number of potential sentences automatically doubles. Adding a simple adverb such as _yesterday_ drives the potential productivity over 5,000,000; adding the adverb _quickly_ would drive it over 10,000,000 and yet we are still dealing with a single elementary sentence pattern from a beginners' manual and a vocabulary of less than a hundred items. From this simple demonstration it becomes very clear that the potential set of sentences that could be made by speakers of English is truly astronomical, a figure so vast that it is quite simply inconceivable. If this is what one had to learn in order to learn English, no one would ever speak the language. The very suggestion that a language is a set of sentences, potential or actual, is absurd. What the learner acquires when he learns a language is a finite set of elements that are systematically related in such a way that they can be fitted together to form meaningful sequences.

This confusion over a fundamental definition in the discipline of linguistics has far-reaching consequences. An apparently dependent consequence of this confusion, for example, would see _langue_ and _parole_ (in the Saussurean sense) as isomorphic, with _parole_ the simple actualisation of _langue_. In short _langue_ would be the set of potential sentences, and _parole_ the actualisation of those sentences. Lyons, for example, distinguishes _sentences_ as units of _langue_ whereas _utterances_ are the corresponding instances of _parole_. This would seem to parallel Chomsky's distinction between _competence_, the set of sentences of the ideal speaker-hearer and _performance_ the same

set subjected to the trial and error of stammerings and other confusions.

But if one reads Saussure it is quite clear that in his view langue and parole are not isomorphic but "deux choses absolument distinctes" (1916:37), and in fact he categorically says (1916: 172): "La phrase...appartient à la parole, non à la langue," indicating thereby, as we have already said, that a language has no sentences, that sentences belong to discourse, the product that one produces by exploiting or using a language.

To make this point clear we may express it in terms of a concrete analogy. If a child, by using a construction set such as a Meccano kit, an Erector set or Leggo blocks, makes a model of an aeroplane or a truck, we may compare the kit that he uses to langue, and the models that he produces to parole. The aeroplane, and the truck, and all the other possible models that the child may make, are not part of the kit, which consists quite simply of a set of paradigmatically related parts. Although these kits and their parts may be used for model building, that is no good reason for describing such a kit as a set of potential models. In terms of our concrete analogy, in fact, such a definition would be the reverse of empirical, since it would idealize the construction kit, describing it as something possible instead of as something real. Idealism and empiricism would appear to be strange bedfellows.

A second consequence of attempting to define a language as a set of sentences is the conclusion that all grammar is sentence grammar, which results in the equation of grammar with syntax, and the downgrading of morphology, which then becomes determined by syntactic rule. In this way morphology becomes a subdiscipline of syntax, instead of an important discipline in its own right.

Curiously the germ of this idea is to be found in Saussure himself (CLG 186) since in the standard edition of the Cours morphology is considered to be no more than the marking of syntactic function: "Linguistiquement, la morphologie n'a pas d'objet réel et autonome; elle ne peut constituer une discipline distincte de la syntaxe." Many Saussureans have adopted this point of view unquestioningly, so that linguists as diverse as Hjelmslev and Martinet, for example, would choose to deny any significant difference between morphology and syntax, which are seen, in this view, as carrying out the same functional role.

Two post-Saussureans, however, Roman Jakobson and Gustave Guillaume, have consistently argued that morphology is meaningful in its own right, and that far from being determined by syntactic function, may even on occasion be seen as the determiner of syntactic function. In support of their view one may find in languages such as Latin, which shows extensive morphological

contrasts, minimal pairs which differ in morphology but not in syntax

(2) Currit in urbem
He runs into the city

Currit in urbe
He runs in the city

In these Latin sentences the difference of meaning stems entirely from the morphological content, showing that inflectional morphology is meaningful in its own right.

In French, likewise, one can give minimal pairs with the indicative and the subjunctive where the subject has a choice according to what he wishes to say

(3) Je comprends qu'il a acheté un auto
I understand he bought a car

Je comprends qu'il ait acheté un auto
I can see why he bought a car

In such pairs the contrast is not syntactic, but purely morphological.

Even in a language such as English, which does not have an extensive morphology, there are minimal pairs such as

(4) I saw him cross the road

I saw him crossing the road

In this pair of sentences the dependent verbal has the same syntactic function, but there is nevertheless a subtle difference of meaning that is entirely dependent on the different morphological forms of the verbal.

The analogy of the child's construction set, furthermore, leads to the suggestion that a language not only does not have sentences, but it does not have sentence patterns either. The construction set has pieces that fit together in certain ways, and this fact leads to the common repetition of certain patterns of construction in the models. Certain patterns are found to be successful and are continually exploited, but viewing the situation empirically, one would be loath to say that the patterns are part of the construction set: It would be better to say that they are patterns that one follows in exploiting the construction set.

One sees the sense of this view in second language teaching. A learner of English may have acquired 50 or 60 different

sentence patterns before sentence negation is learned. Analytically, the learning of sentence negation doubles the number of sentence patterns at the learner's disposal, but all he really learns is a cluster of simple facts, not another 50 or 60 sentence patterns. The patterning of the sentence is dependent upon the construction used in the sentence, not upon some abstract schema. It is in this way that we say that adjectives normally precede nouns in English; we do not say that if a word precedes a noun it is normally an adjective, and we do not need an imaginary slot in front of a noun in order to place an adjective there.

This leads to the suggestion that syntax is essentially word based, since words in a language like English fit together in certain ways, like the parts of a construction set: adjectives are dependent upon nouns, verbs upon subjects, adverbs are tertiaries, dependent upon prior predications, and so forth. And since all kinds of recycling is possible, whereby a sentence, for example, can be recycled as a noun, and end up as a noun clause, or as an adjective, and end up as a relative clause, or as an adverb, and end up as an adverbial clause, the possibilities become limitless, resulting in the kind of astronomical sentence productivity that we have already discussed.

It would seem, therefore, that the definition of a language as a set of sentences, being based upon a metaphysical prejudice, should be abandoned as misguided and misleading. And it would also seem to be more profitable, given that a language is not a set of sentences, and given the extraordinary facts of sentence productivity, to view syntax as word-based rather than sentence based.

Finally, in accepting that syntax does not totally determine morphology, one must beware of the equal and opposite error of presuming that morphology totally determines syntax. The child constructing his model starts with an idea that largely determines not only the selection of parts from the kit but how they should be combined. And in like fashion the speaker normally starts with a pre-linguistic "ground plan" of what he wishes to express--what Guillaume called the "visée de discours." It is this pre-linguistic ground-plan that will often, to a large degree, determine both morphology and syntax. One must be prepared to recognize the proper independence of both morphology and syntax, and at the same time, be prepared to recognize their interdependence.

A certain priority, nevertheless, must be given to morphology, stemming from a simple empirical observation. In a paradigm one has morphology without syntax. It would be very difficult to imagine a syntax without morphology. The greater independence of morphology establishes its priority in the functioning of language.

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COMPLEX LEXICAL COHESION IN THE ENGLISH CLAUSE AND SENTENCE

- An Extension of the System of Nominal Group Continuity in Everyday English Use

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Introduction

The discovery and description of "associated nominals" first discussed by Christophersen (1939) and then in more detail by Hawkins (1978) and Jordan (1981) has made possible the detailed analysis of the major systems of lexical cohesion between sentences. The importance of lexical cohesion between sentences as the sole defining criterion for the genre of "description" has been discussed (Jordan 1982a); main and side patterns of cohesion in texts have been described with the use of basic re-entry systems and associated re-entries, and by implicit and overt perspective re-entry systems (Jordan 1982b); some analysis of re-entry techniques in non-thematic positions in the clause has been presented (Jordan 1982c); and the broad classes of superordinate, hyponymic and co-hyponymic associated nominals have been introduced (Jordan 1983). Analysis of systems of re-entry between clauses will also be available (Jordan 1984), but the complexities of lexical cohesion within the English clause and sentence have yet to be addressed. This paper introduces some of the concepts involved.

As this paper takes for granted some recently-published concepts perhaps not familiar to all readers, there is a need for brief introductory material to ensure a common starting point. The term "re-entry" is used to signify all means by which the speaker/writer re-includes a previous topic into the text to say something more about it. Co-referential re-entry systems include lexical repetition (full and partial), substitution, ellipsis and listing, synonymy, naming, and generic nouns; and identified re-entry systems between clauses of a sentence include relative, non-finite and verbless clauses, and appositives. An associated nominal is a nominal group which, in context, is semantically associated with a previously introduced nominal group, often in such a way that the association is, or can be, overtly "triggered" within the associated nominal. Thus <u>his hat</u> and <u>the output of the amplifier</u> are triggered associated nominals and <u>the output</u> is an untriggered associated nominal. The association can be any part, characteristic, feature or other associate of the "trigger" (hyponymic associates); or it can be a superordinate term or a co-hyponym, with the terms "hyponym" and "co-hyponym" being used quite loosely. In addition, associates can have almost any combination of association with one or more triggers, and these are perhaps best described diagrammatically or by the use of familial terms such as cousin, uncle, etc. Many of the complexi-

ties of associated nominals and their diagrammatic representation with related semantic fields are discussed in this paper.

The analysis provided in this paper (that's a triggered associated nominal!) starts off with quite simple concepts of true and then associative reflexive connections within the clause, and then progresses to more difficult concepts involving lexical cohesion crossing clause and sentence boundaries in combination with relations between the clauses themselves. Some discussion is provided of the lexical connection between successive matrix clauses and also between the matrix clauses and the main clauses they dominate. Complexities created within the clause and sentence by multi-participant involvement in the text are then discussed, leading to analysis of quite complex examples containing all of the principles discussed in the paper.

It is important to recognize that the analyses provided (an untriggered associated nominal!) do not include discussion of the cohesion created by the grammar of the clauses and sentences. The lexical cohesion should be seen as being additional to grammatical cohesion, the grammar being the means by which information is communicated about the participants, often providing common information about two or more participants.

Lexical Cohesion within the Clause

The well known reflexive form as direct or indirect object is a clear example of lexical cohesion working in conjunction with the grammar of the clause:

(1) The average person would envy Dave M....Dave denied himself enjoyment. (Today, 9 Feb 82, P14)

Dave M. is re-entered twice in the second clause, first as the partial repetition Dave as subject and then the reflexive himself as indirect object. This can be illustrated as:

Dave M.
└──→Dave denied himself enjoyment.

More usually the reflexive is in the form of an associated nominal with possessive triggering:

(2) Seven women entered the second week of a hunger strike...The demonstrators ended their first seven days of fasting Monday. (Globe and Mail, 26 May 82, P13)

The topic Seven women is re-entered first as the generic classifying nominal The demonstrators and then in the hyponymic associated nominal their first seven days of fasting as object:

Seven women
(associate) ├──→The demonstrators ended
└──→their seven days of fasting Monday

Further complexity occurs when the object is a two-stage association from the re-entered topic:

(3) He only pretended to listen to family conversation. (Today 9 Feb 82, P14)

Here the topic, Dave M., is re-entered as the subject He, but in the context it is clear that the object is an associate of Dave's family and is therefore two stages removed from Dave himself (Dave → Dave's family → Dave's family's conversations). The family is triggered, but the trigger Dave M. is left implicit:

Dave M.
→ He only pretended to listen to
(two-stage associate) → family conversations.

These and similar types of lexical cohesion occur in many positions within the clause and must eventually be accounted for in any grammar of English which purports to describe actual English use. Associated re-entry within a nominal group (e.g. "You and your spouse..." Queen's Alumni Review, Mar/Apr 83, P3) is a common occurrence, but the possibilities of lexical cohesion within the clause seem almost endless, and many more instances occur in the examples of this paper. Here is an example in which a re-entry and its associate are bound within a clause dominated by how which shifts it into a nominal group object of the main verb:

(4) You were probably a child who would run home crying about how you hated your best friend. (New Woman, Jun 82, P20)

Lexical Cohesion across Clause Boundaries

The same concepts of associated lexical cohesion are seen to be used between clauses of a sentence. Although the results often appear to be horrifyingly complex, each element of the total cohesion within and between the clauses is quite simple to understand. Here is a single-sentence example with four re-entries in two clauses:

(5) The university community has to take its message to the public if it wants to change government policies towards the institutions. (OCURFA Forum, 9 May 83, P1)

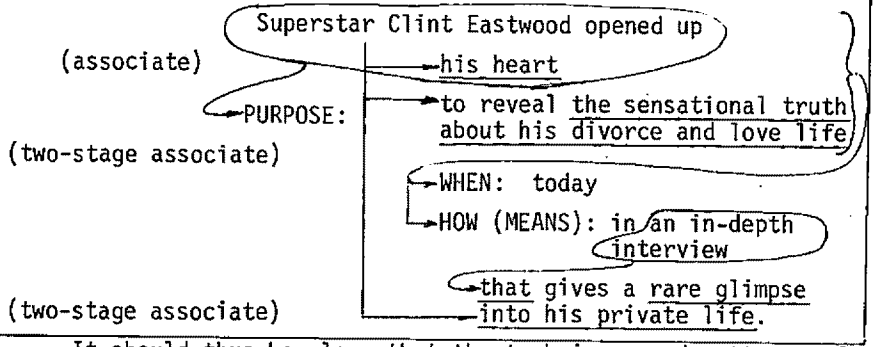
The main clause contains the re-entry (from a previous sentence) The university community and the associative reflexive its message, and the second clause contains the substitute it and the superordinate the institutions as trigger of the associate government policies towards the institutions.

(hyponymic associate) → The university community has to take
→ its message to the public
(hyponymic associate) → if it wants to change
→ government policies towards the institutions

As relations between clauses can also be seen to follow the same patterns of re-entry, it is now possible to describe and illustrate many of the complexities of cohesion within sentences that occur in addition to the grammar of that sentence. Here is an example which includes three separate hyponymic associations in several clauses with adverbial adjuncts:

(6) Superstar Clint Eastwood opened up his heart to reveal the sensational truth about his divorce and love life today in an in-depth interview that gives a rare glimpse into his private life. (Star, 18 May 82, P19)

The clause-relational and lexical cohesion of this sentence can be shown as:



It should thus be clear that the techniques and patterns of lexical cohesion described here and elsewhere are an essential part of the meaning of many sentences, and that they are compatible with principles of clause relations.

Dominant Matrix Clauses

Reporting matrix clauses range from uninvolved sources through associated forms to directly involved sources. Here is an example with attributes to objective sources:

(7) Soviet and Afghan government troops have started an offensive against guerrillas entrenched in the Panjshir Valley north of Kabul, Western diplomatic sources said yesterday.

They said the offensive against the long-standing rebel stronghold apparently began May 17, when Soviet and Afghan troops built a pontoon bridge across the Panjshir River at Bazarak. (Globe and Mail, 26 May 82, P12)

The reported information in the two paragraphs is lexically linked together with the synonym nominal group offensive... stronghold and the trigger an offensive...Kabul, and also by the partial repetition of the aggressive participants Soviet and Afghan troops and the locative associate the Panjshir River at Bazarak being a co-hyponym of the Panjshir Valley north of Kabul. (Such complex combinations of lexical cohesion are discussed

later.) Both sentences are dominated by the two matrix clauses linked by the substitute They, there being no lexical cohesion between the matrix clauses and the main body of the text in the main clauses.

In contrast with Example 7, the following example, as well as displaying lexical cohesion between parts of the main information given and between the attribution clauses, also provides associative links between the main information and the source of that information in the matrix clauses.

(8) Luella Tyra is an 89-year-old competitive swimmer who, according to her coach, has broken so many records that even young swimmers are envious.

While unique to her age category, Tyra never competes alone.

"Dot's a great competitor," says her coach, recalling an occasion where his protégée swam against a group of West German swimmers in their seventies. (New Woman, Jun 82, P16)

The main participant is identified as Luella Tyra and is re-entered by the relative pronoun who, the partial repetition Tyra and the nickname Dot as basic re-entries; and as her age category as a hyponymic associate. The source of the information is her coach (included twice), indicating the association of the source with the main participant. The use of his protégée includes the near-opposite term to coach to re-enter Tyra again as a reciprocal associate of her coach. The lexical recoverability of the implicit re-entry of her after envious is an example of one of the many types of implicit lexical cohesion, and the final three words cited include the associate their seventies of the minor participants.

Even closer lexical cohesion can occur between reporting and main clauses, as illustrated by:

(9) Prime Minister Indira Gandhi said yesterday she did not think the results of last week's regional elections in India amounted to a defeat for her Congress (Indira) Party. Mrs. Gandhi, who is under opposition attack for forming governments in two states without securing a majority, said her party had done much better than expected in many places, but she was not entirely satisfied with the results. (Globe and Mail, 26 May 82, P3)

The dominant and minor matrix clauses in the first sentence are linked with the substitute she and with the further associated re-entry her Congress (Indira) Party in the main clause. In the second sentence, the matrix clause is split by the relative clause, with the associate/partial repetition re-entry her party and she providing further re-entries. The last two words cited

form a partial repetition of the earlier nominal group the results ...India.

A further complication occurs when the participants in successive matrix clauses are associates:

(10) Miss Loren, who is at a jail in Caserta, north of Naples, serving a 30-day sentence for tax evasion, "doesn't sleep, doesn't eat and is very upset," Il Messagerio said, quoting family and jail sources. The paper quoted the jail's director, Liliana De Cristofara, as saying she was "seriously concerned about (Miss Loren's) psychic state."

The report said Miss Loren was visited Monday by Dr. Rosa Caduto, who later diagnosed "a serious depressive state. She is very shaky... To calm her a bit I have prescribed her some tranquilizers."

Giovanna Cau, the actress's lawyer, said her client will ask for semi-liberty status... (Globe and Mail, 26 May 82, P15)

The main topic is Miss Loren, but the jail she is in is also involved in re-entries later. The quotation in the first sentence is attributed to Il Messagario as the secondary source and the two associates family and jail sources as the primary sources. The associate family...sources has two stages from the topic (Miss Loren → her family → family sources). In the second sentence, attribution is again given to Il Messagario as the secondary source with the generic nominal The paper, and the primary source is identified as the associate of the jail the jail's director, who is named in the appositive. The report in the third sentence is an untriggered compound associate of Il Messagario and also Miss Loren. That is, it has two triggers, which could be made specific by The report by Il Messagario about Miss Loren. In the same paragraph, the association of Miss Loren and Rosa Caduto is made clear by the title Dr. and the following text. In the third paragraph, the matrix clause attributes the following information to Giovanna Cau, whose association with Miss Loren is made clear in the appositive. The following use of her client is another example of reciprocal association, as discussed in Example 8.

Multiple Participant Re-entries

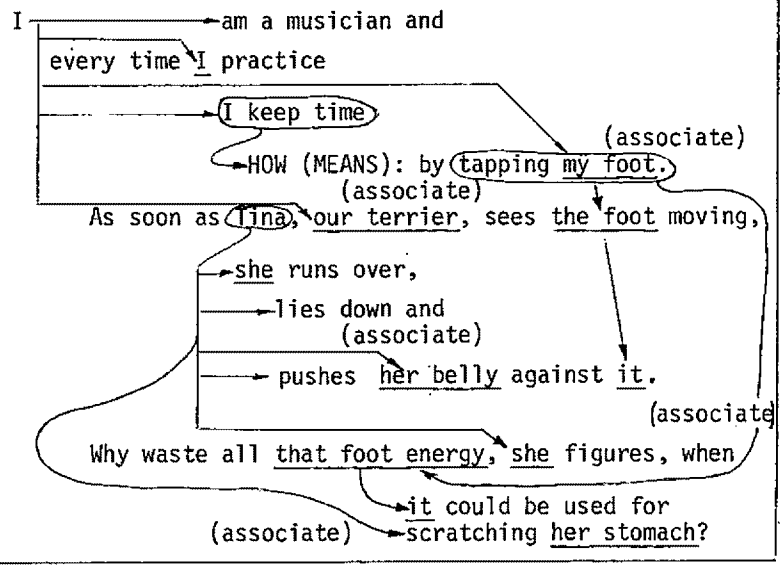
Some of the earlier examples illustrated re-entry of two or more people or things in quite complex chains of re-entry. These participants are seen to be related to each other through the grammar and meaning of the sentences, but each may also have its own chain of basic and associated re-entries. Here is an example with two major participants, each with its own associates:

(11) I am a musician and every time I practice I keep time by tapping my foot.

As soon as Tina, our terrier, sees the foot moving, she runs over, lies down and pushes her belly against it.

Why waste all that foot energy, she figures, when it could be used for scratching her stomach? (Star, 18 May 82, P28)

The overlapping lexical re-entries and associates can best be described by the following illustration:



Although each type of re-entry should be clearly classifiable in detail with further analysis, it may not be possible or desirable to explain fully all of the different types of combinations of lexical continuity and clause relations working within the grammar of English sentences and clauses. However, even at this preliminary stage of the investigation, it should be clear that a deeper analysis of cohesion is now possible compared with a few years ago. To demonstrate this, here is a short extract of an example used by Halliday and Hasan (1976) for their analysis of "ties":

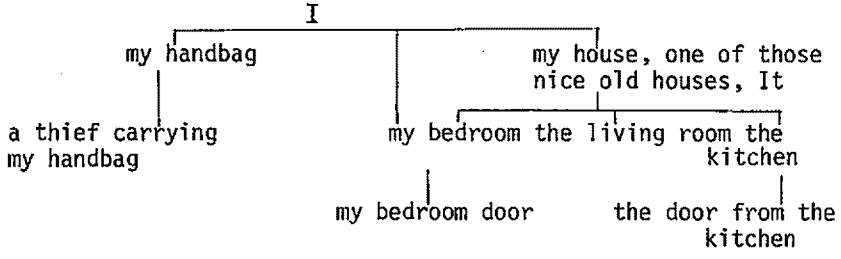
(12) Well, I met a thief in my house. I had one of those nice old houses - I was very lucky. It was about thirty years old, on stone pillars, with a long staircase up and folding doors back on to a verandah. And I came through the door from the kitchen, and a thief carrying my handbag emerged through my bedroom door into the living room at the same moment. (Extract of recorded text from Halliday and Hasan, 1976, P341)

The main participant is the speaker, with many re-entries using I and my. The speaker's house is introduced as an associate of the speaker in the first sentence, and the house is then seen to become a trigger for several other overlapping re-entries later in

the text. Here is an analysis:

I (associate)
met a thief in my house
I had one of those nice old houses
EVALUATION: I was very lucky.
It was about thirty years old,
on stone pillars
with a long stone staircase up and folding doors back on to a verandah.
(two stage associate)
And I came through the door from the kitchen,
(two stage associate)
and a thief carrying my handbag emerged through
(two stage combined associate) (associate)
my bedroom door into the living room at the same moment.

Analyses such as these do not clearly convey the semantic connection between all the associates in the text, and so the semantic field for the text is also a useful means of understanding the lexical cohesion involved. Here is the semantic field for this short extract:



Analysis of a Complex Example

The study of lexical cohesion in clauses, sentences and paragraphs of English texts has now reached the stage at which quite detailed analysis of complex texts can be made and explained within an overall theoretical framework. To illustrate the sort of complexity which can be described and explained, here is a complete example containing many instances of lexical cohesion which are interrelated within the clauses and sentences. A detailed analysis of the cohesion of the example and the related semantic field are then provided.

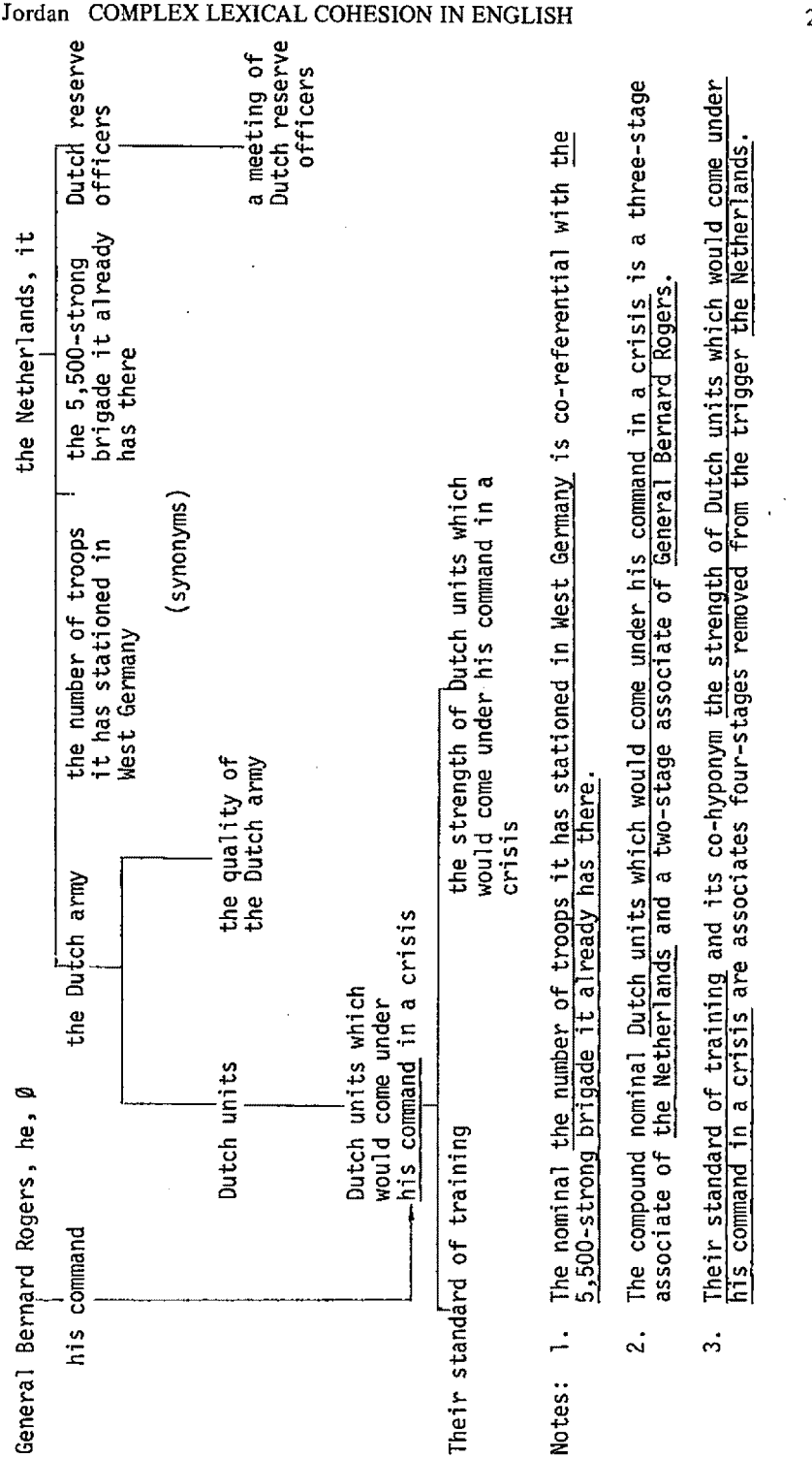
(13) Dutch Army Criticized

General Bernard Rogers, the supreme commander of North Atlantic Treaty Organization forces in Europe, has criticized the quality of the Dutch army and said the Netherlands should double the number of troops it has stationed in West Germany. He told a meeting of Dutch Reserve officers on Monday that he was concerned at the strength of Dutch units which would come under his command in a crisis. Their standard of training fell far below desirable levels, he added. The Netherlands should station an additional brigade in a forward position in West Germany to supplement the 5,500-strong brigade it already has there, he said. (Globe and Mail, 26 May 82, P3)

The complexity of this example is created by the matrix clauses related to the major participant, the highly involved associates both of the general and of the Netherlands, and the way these associates are interrelated within the clauses and sentences.

General Bernard Rogers
(appositive)
→ the supreme commander of North Atlantic forces in Europe
(two stage cataphoric associate)
→ has criticized the quality of the Dutch army
(synonym)
and said → the Netherlands should double (associate)
the number of troops it has stationed in West Germany.
(two-stage associate)

He told a meeting of Dutch Reserve officers on Monday that (four-stage associate)
(compound associate)
→ he was concerned at
→ the strength of Dutch units which would come under his command in a crisis.
(two-stage associate)
co-hyponymic associate
→ Their standard of training fell far below desirable levels,
→ he added:
SOLUTION: The Netherlands should station an additional brigade in a forward position in West Germany
PURPOSE: to supplement the 5,500-strong brigade it already has there,
→ he said:
(associate)



Notes: 1. The nominal the number of troops it has stationed in West Germany is co-referential with the 5,500-strong brigade it already has there.

2. The compound nominal Dutch units which would come under his command in a crisis is a three-stage associate of the Netherlands and a two-stage associate of General Bernard Rogers.

3. Their standard of training and its co-hyponym the strength of Dutch units which would come under his command in a crisis are associates four-stages removed from the trigger the Netherlands.

Further Developments

Although it is possible, and often educationally useful, to use very brief examples of text or to choose texts which are relatively simple in their relative lack of lexical cohesion, the larger texts and more complex texts which exhibit the sort of complexities mentioned in this paper cannot be ignored. Further work is needed to relate the concepts discussed here with Winter's analysis (1982) of the matching relation and particularly comparative affirmation and denial within and between sentences. Further work is also indicated in figurative meanings and in the many instances of implicit lexical connection which occur in many texts (see Example 8); implicit object, adjectival complement, agent, and instrument are obvious instances which need detailed study.

The ultimate aim of this branch of work is to describe all the systems of nominal cohesion in English use, and then possibly to relate it to verbal semantics, clause grammar and sentence grammar.

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OUR CHANGING UNDERSTANDING OF THE SUFFIX -EN IN ENGLISH

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This paper analyzes present-day understandings of the English suffix -en based on a survey of native speakers of American English.

The procedures: A questionnaire containing a list of 200 words with -en endings was distributed individually to a random group of 50 prospective respondents. Forty five respondents returned completed questionnaires. The word list on the questionnaire contained substantives, adjectives, verbs, and adverbs selected from the Reverse Dictionary of Present-Day English by Martin Lehnert, Leipzig, VEB Verlag, 1971. The words on the list were arranged in progressive alphabetical order according to word beginnings. No indication of "parts of speech" was given, nor were the words grouped in any way that might have revealed their membership in any category. The fact that all the words ended in -en was something the respondents had to discover for themselves; there was no advance notice to that effect. The respondents were asked to check each word's membership in one or more of the following columns: 1. A person, a place, a thing. 2. A descriptive word, a characteristic. 3. Something to do. 4. I do not know. (In the body of this text we shall refer to these categories by number only.) The total number of item responses exceeded 10,000. Most respondents checked multiple category membership for the majority of words. All actual responses were tabulated and are reflected in the tables that follow here in the text. In instances where a given word produced no response, the item was not automatically counted in column 4.

The instructions to the respondents were brief and, we thought, simple. The project was to find out which of these 200 words were known to speakers of English. The respondents were to check each word's membership in one or more of the columns given. The respondents were not to consult any dictionary in making their responses, otherwise the project would be invalid. We are satisfied that these instructions were faithfully observed; many of the respondents marked their questionnaire in our presence.

The respondents included the following: the 25 female respondents indicated the following occupations and age levels: clerk, 45; receptionist, 57; marketing research analyst, 36; accounting clerk, 21; accountant, 33; librarian, 70; librarian, 47; library supervisor, 22; library clerk, 59; part-time teacher, 35; teachers: 65, 55, 45, 32; ten suburban homemakers: ages 34 to 76 (seven of them over 55); fundraiser, 54.

The 20 male respondents indicated the following occupations and age levels: teachers: 30, 36, 40, 41, 52, 73; clergy, 80; librarian, 44; business executive, 57; mail clerk, 31; engineer, 36; accountant, 22; purchasing agent, 34; newspaperman, 61; factory plant manager, 53; retired truck driver, 71; retired tradesman, 87; students: 27, 12; handyman, 16.

Because the total number of respondents is relatively small, no attempt was made to develop statistics according to any grouping except male and female. In the discussion of the findings, informal comments will be made with reference to some groups of the sample.

The tabulated responses:

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
acumen	6	10	2	2	6	12	1	6
alien	17	15	0	0	19	19	0	0
amen	3	12	2	2	6	19	3	2
ashen	1	19	0	1	1	24	0	1
aspen	17	2	0	2	20	3	0	1
balden	0	5	0	15	0	5	2	17
barken	1	3	1	15	2	4	2	17
barren	1	19	0	1	2	24	0	1
batten	3	6	13	1	2	4	16	5
beaten	0	20	0	0	0	24	6	0
bedridden	1	19	0	0	2	24	0	0
beechen	1	3	0	14	3	4	0	18
beholden	1	16	2	0	0	19	5	0
bespoken	0	14	3	2	0	19	3	3
betoken	0	13	2	5	0	8	8	8
birchen	1	5	1	13	3	4	2	17
bitten	1	15	4	2	0	20	6	0
bounden	0	7	0	12	1	12	4	10
bracken	5	6	0	9	11	5	1	8
brazen	1	17	0	1	1	24	2	0
broaden	0	8	12	1	0	15	13	0
broken	0	19	2	0	1	22	5	0
burden	13	10	5	0	19	7	10	0

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
care-laden	4	19	0	0	0	23	0	2
catechumen	13	3	0	6	18	4	0	7
chasten	0	8	13	1	0	13	14	1
cheapen	0	13	9	0	0	15	14	0
chicken	14	9	1	0	24	10	4	0
chosen	5	16	4	0	4	19	9	0
christen	0	5	11	5	3	9	18	1
citizen	15	5	0	1	24	4	0	0
cloven	0	16	1	2	1	18	0	5
coarsen	0	8	7	5	0	13	16	2
coven	12	1	1	5	14	4	1	6
cozen	0	3	3	13	2	1	10	14
craven	2	16	1	1	4	19	4	2
crest-fallen	3	17	0	0	1	24	1	0
deaden	1	9	11	0	0	12	16	1
deafen	0	8	8	2	0	12	17	0
delicatessen	20	1	0	0	24	2	0	0
denizen	15	2	1	0	18	2	0	6
dizen	0	3	1	15	1	1	3	20
downtrodden	5	18	2	0	2	23	2	2
doyen	5	2	0	11	6	2	0	17
dozen	8	13	0	0	11	18	0	0
drunken	2	18	2	0	3	22	0	0
earthen	3	16	0	0	2	25	0	0
Eden	18	1	0	0	25	2	0	0
e'en	2	16	0	10	4	16	2	11
eleven	8	14	0	0	10	20	0	0
even	1	17	2	0	0	24	10	0
flatten	1	11	11	0	0	12	17	0
flaughen	0	3	1	16	1	0	2	20
flaxen	2	16	0	2	2	22	2	1
forbidden	1	19	3	0	1	22	5	0

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
forsaken	1	19	3	0	2	24	6	0
freshen	0	11	10	1	0	13	20	0
garden	17	1	5	0	25	1	5	0
gladden	1	9	10	3	0	11	13	1
glassen	2	7	1	11	1	6	1	18
glazen	0	7	2	10	0	10	8	8
glisten	0	16	5	0	0	17	10	0
glotten	2	4	0	14	3	3	1	21
gluten	11	6	1	6	18	9	1	2
golden	0	19	0	0	1	24	1	0
Goshen	15	2	0	3	20	0	0	3
greisen	1	2	0	16	1	2	0	22
grossen	0	2	4	15	2	8	1	15
gulden	5	2	0	14	6	3	0	15
hamesucken	0	3	0	16	0	1	1	23
happen	0	11	9	0	0	11	17	0
harden	0	10	12	0	0	13	17	0
hausen	3	3	0	14	5	0	0	18
haven	17	1	0	1	24	5	1	0
hearten	0	8	11	1	0	13	14	1
heathen	14	7	0	1	24	8	0	0
heaven	18	3	0	0	24	5	0	0
heighten	0	10	13	0	0	8	20	0
hempen	3	5	0	12	1	7	0	16
herden	1	4	2	13	0	3	4	17
hoarsen	0	4	5	11	1	8	9	8
hodden	0	2	2	16	1	4	1	20
hoiden	2	3	0	14	3	1	0	20
hoyden	4	3	0	12	13	2	0	12
hyphen	15	7	1	0	21	2	3	1
imbolden	0	4	5	10	0	4	10	11
inken	1	4	8	9	1	4	7	15

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
kaiten	0	3	0	15	0	0	1	23
kitchen	19	1	0	0	25	2	0	0
kitten	18	1	0	0	25	0	0	0
kraken	1	1	0	17	4	1	1	19
kuchen	6	2	1	10	18	1	0	7
lathen	3	3	2	11	1	3	4	18
leaden	1	17	3	1	0	22	3	2
leaven	5	12	8	0	9	9	15	0
leglen	0	1	0	19	1	2	1	20
lengthen	0	6	12	0	0	7	19	0
lenten	2	13	2	1	6	19	0	1
lichen	13	3	1	3	18	3	0	3
liken	0	7	13	1	0	8	15	3
limen	1	4	0	12	3	1	1	19
limpen	0	6	1	11	1	7	3	16
linden	8	3	0	9	16	1	1	7
linen	15	7	0	0	22	9	0	0
lippen	0	3	0	15	3	0	1	20
linten	0	5	0	12	4	4	0	19
listen	0	3	16	0	0	5	19	0
louden	0	5	7	7	0	8	7	10
lumen	6	4	1	8	12	3	1	10
magdalen	7	9	0	3	15	5	0	6
maiden	14	6	0	0	22	9	0	0
marten	12	2	0	5	13	0	0	11
meeten	2	1	1	15	0	2	3	19
midden	2	6	0	11	4	2	0	19
milden	0	4	2	13	1	2	2	18
milken	0	4	6	10	1	6	3	14
misshapen	1	16	0	0	1	22	4	0
mistaken	1	16	4	1	0	21	5	0
mitten	17	1	0	2	24	2	1	0

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
mizen	5	5	0	9	3	3	0	20
mizzen	7	5	0	9	3	3	0	18
molten	2	18	0	0	0	23	2	1
mullen	3	3	1	10	4	2	3	16
oaken	5	14	0	1	2	20	1	4
oaten	3	7	0	9	0	8	1	15
often	0	20	0	0	0	23	3	0
olden	0	20	0	0	0	24	1	1
open	1	15	10	0	1	19	14	0
oven	18	0	0	0	25	0	0	0
parpen	1	0	0	16	1	1	1	22
paten	10	0	0	8	14	0	0	10
paven	1	3	5	12	1	7	2	16
peachen	1	2	1	16	3	6	2	15
platen	6	4	1	10	10	1	0	14
platten	3	4	0	14	3	3	0	18
plumpen	0	6	5	10	0	7	6	13
pollen	17	1	0	0	22	1	0	2
quicken	0	9	14	0	1	11	18	0
quieten	0	9	4	9	0	6	11	7
raven	13	5	2	0	24	6	2	0
redden	1	10	9	2	0	14	14	1
ripen	1	9	11	1	0	12	17	0
risen	0	12	10	0	0	23	8	0
riven	0	9	0	11	2	10	3	10
rotten	1	19	1	0	0	25	1	0
roughen	0	10	11	1	0	7	20	1
rushen	0	6	2	13	0	5	6	15
sadden	0	10	9	0	0	12	15	0
samisen	1	2	0	18	4	1	1	20
sarsen	0	2	0	18	2	0	0	23
seven	11	14	0	0	11	21	0	0

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
sharpen	0	9	14	0	0	8	19	0
shotten	0	4	2	15	0	5	3	18
sicken	0	9	10	1	0	12	17	0
silken	1	18	0	1	1	23	2	0
siren	18	1	0	0	22	3	0	1
slacken	0	10	13	0	0	9	17	0
sleeken	0	4	4	12	1	9	9	7
sloven	2	15	0	4	5	16	2	3
smarten	0	8	4	7	0	10	11	4
smoothen	0	6	5	8	0	7	14	5
sodden	1	16	1	2	1	20	3	2
soften	0	10	10	0	0	9	18	0
soken	0	5	1	12	0	2	3	20
spoken	1	12	6	0	0	17	8	0
spilliken	0	1	0	16	3	0	1	19
starken	0	3	3	13	0	3	3	19
stiffen	0	8	12	1	0	7	19	0
straighten	0	9	13	0	0	5	20	0
stricken	1	18	0	0	0	17	10	0
sudden	0	18	0	0	0	25	0	0
sullen	0	16	0	2	0	24	1	0
sweeten	0	9	12	1	0	7	19	0
tappithen	1	0	0	17	2	0	0	22
tauten	1	2	5	12	0	2	13	10
thicken	0	8	12	0	0	7	21	0
threaten	0	7	14	0	0	6	23	0
token	12	7	0	0	20	11	1	0
toughen	0	7	12	2	0	7	20	1
turfen	0	4	0	13	2	2	3	14
unbidden	1	16	0	4	0	16	5	5
unshaken	1	19	0	0	1	23	4	1
vixen	14	5	0	2	23	5	1	0

	MEN				WOMEN			
	1	2	3	4	1	2	3	4
waken	0	5	15	0	0	4	19	0
warden	19	1	0	0	24	1	0	0
warren	14	6	1	3	19	1	0	5
waspen	2	4	0	14	4	3	0	16
waxen	0	16	2	2	0	21	4	2
weaken	0	9	11	0	0	7	23	0
wealden	1	1	0	16	0	2	2	23
weazen	0	4	2	13	0	4	2	19
well-spoken	1	18	2	0	0	24	3	0
wheaten	1	7	0	10	3	11	1	10
widen	0	7	15	0	0	6	23	0
withen	1	2	2	13	0	5	0	17
wizen	0	7	3	10	1	9	5	10
wolfen	4	5	0	12	6	6	1	14
wooden	4	15	0	0	1	25	0	0
woollen	3	11	0	4	4	19	1	3
youthen	3	6	0	13	3	5	3	16

Findings:

1. Among the substantives, the following scored high in column 1: alien, aspen, burden, chicken, hyphen, kitchen, kitten, mitten, linen, maiden, marten, oven, paten, pollen, raven, vixen, warden. Low scorers in column 1: acumen, amen, batten, bracken, greisen, gulden, hausen, herden, hoyden, kraken, leaven, leglen, limen, lumen, midden, mizzen, mullen, parpen, paven, platen, samisen, sarsen, sloven, spilliken, tappithen, wolfen. Those that scored low in column 1, scored high in column 4. Many substantives from this latter group have either become obsolete, or the objects and concepts which they represent, no longer play a significant role in our present-day cultural circumstances; thus, the midden and the trash heap are not quite the same thing; the bracken and the mullen no longer impact upon our urban existence; the spilliken has vanished from our whole concept of entertainment. There is evidence of considerable reduction in the number of these substantives.

It is interesting to note that while "vixen" still scores high, "wolfen" has become "she-wolf." "Lumen" and "batten" are known chiefly to those persons whose professional lives have to do with them.

Of all the substantives in our sample, "tappithen" yielded the most fascinating results. The word received a score of only 3 in column 1. The respondents did not recognize the morphological composition of the word as "tappit-hen." Obviously, this is no suffixal -en. "Acumen," "amen," and "lumen" are similar examples. The respondents do not differentiate between suffixal and other word-final -en.

2. Adjectives were, in general, well recognized. The magnitude of the scores illustrates this in the following table:

alien	34	even	41	sodden	36
barren	43	heathen	15	sudden	43
bedridden	43	lenten	32	sullen	40
beholden	35	misshapen	38	unbidden	32
bounden	19	olden	44	unshaken	42
care-laden	42	open	34	waspen	7
crest-fallen	41	rotten	43	well-spoken	42
downtrodden	41	shotten	9	wizen	16
				wolfen	11

Of these, the following items received scores also in column 3, where they were apparently perceived as past participles: bedridden, crest-fallen, downtrodden, misshapen, rotten, shotten.

3. The following group of words scored in both columns 2 and 3. The magnitude of the scores per column shows that these words are well recognized as adjectives; their scores are similar to those in the preceding group of adjectives. In column 3 they scored very low, for which we cannot give a clear reason.

	Col. 2	Col. 3		Col. 2	Col. 3
beaten	44	6	forbidden	41	8
bespoken	33	6	forsaken	43	9
bitten	35	10	mistaken	37	9
broken	42	7	molten	41	2
chosen	35	13	risen	35	18
cloven	34	1	riven	19	3
craven	35	5	spoken	29	14
drunken	40	2	stricken	35	10

4. Among adjectives whose basic meaning is that a given thing is made of a certain substance, we find a surprisingly large number of low scores. Of all the adjectives in -en, this group is most strongly affected by obsolescence. The high scorers in this group are of two kinds: (1) Those denoting that at present a thing is still recognized as being made of a substance; these are: earthen, oaken, wooden, woollen, and perhaps, waxen. (2) This kind is comprised of adjectives endowed with the capacity for figurative usage: ashen, brazen, flaxen, golden, leaden,

silken. It is surprising that "linen" received a score of only 16, since it is still used in the original meaning of "made of": linen dress, linen tablecloth, etc. However, we have to recognize that "linen" has become a substantive, supplanting the original "lin"; consequently, in a mere list of words it is less likely to be perceived as an adjective, but rather as a substantive, similar to "silk" or "plastic" which can have either substantive or adjective function. Thus, "linen tablecloth" is perceived the same as "silk tablecloth" or "plastic tablecloth." It is important to note also that a number of these adjectives have dropped the suffix -en. We speak today of "wheat bread," "hemp rope," "wax candles," or "This bread is (made of) wheat", "This rope is (made of) hemp", etc. This procedure can be used only in instances where the result does not confuse the concept "made of" with the concept of "intended for." The "wooden bin" is not to be confused with the "wood bin." In "milk chocolate" and "milk pail," "milk" does not express the same concept.

Here are the scores for this group of adjectives:

ashen	42	golden	43	oaken	34
aspen	5	hempen	12	oaten	15
barken	7	inken	8	peachen	8
beechen	7	lathen	6	rushen	11
birchen	9	leaden	39	silken	41
brazen	41	linden	4	turfen	2
earthen	41	linen	16	waxen	37
flaxen	38	linten	9	wheaten	18
glazen	17	milken	10	wooden	40
				woollen	30

5. The scores for verb infinitives indicate that a great number with the suffix -en have become obsolete. However, we need to note that from among this group some have dropped the -en and are currently being used without that suffix: to bald, meet, plump, quiet, smart. "Hyphen" became expanded into "hyphenate." In examining the scores of the high scoring group, one is left with the impression that they, too, may be in a state of obsolescence, though to a lesser degree than the low scoring group. One third (12) of the high scoring items in our sample received scores below 50% of the possible maximum score of 45. We can say that the level of recognition for all verb infinitives in -en included in our list, turned out to be considerably lower than had been anticipated. It is important here to keep in mind that some of the verbs in the high-scoring group are often supplanted--at least in the spoken language--by phrases consisting of "make" or "become," plus the respective adjective form. Thus: to make, or become cheap, coarse, deaf, flat, glad, hard, rough, sad, stiff, tough. This phenomenon only seems to further endorse the impression that verb infinitives in -en are in a state of obsolescence.

The Low Scoring Verbs

amen	5	haven	1	plumpen	11
balden	2	hoarsen	14	quieten	15
barken	3	hoyden	0	smarten	15
betoken	10	hyphen	4	sodden	4
burden	15	imbolden	15	tauten	18
cozen	13	lichen	1	token	1
even	12	lippen	1	wealden	2
garden	10	louden	14	weazen	4
glisten	15	meeten	4	wizen	8
glotten	1	milden	4	youthen	3
grossen	5	platten	0		

The High Scoring Verbs

batten	29	harden	29	sharpen	33
broaden	27	hearten	25	stiffen	31
chasten	21	heighten	33	straighten	33
cheapen	23	leaven	23	sweeten	31
christen	29	lengthen	31	thicken	33
coarsen	23	liken	28	threaten	37
deaden	27	listen	35	toughen	32
deafen	25	quicken	32	waken	34
flatten	28	redden	23	weaken	34
freshen	30	ripen	28	widen	38
gladden	23	roughen	31		
happen	26	sadden	24		

Conclusions

1. The awareness of the diversity of functions of the suffix -en among American speakers of English is practically extinct in the ordinary use of the language.
2. The suffix -en is no longer clearly differentiated from other word-final -en in the ordinary use of the language. In the decoding process, the native speaker's attention focuses first and foremost on word unit recognition, rather than on morphological components. Only when word unit (total word) recognition fails, some effort--not highly systematic--is made to grasp morphological components. In this latter step, however, the morphological boundaries are often wrongly perceived: "tappith-en," because it was placed among so many words that ended in -en. Or "be-dridden," as one of the respondents read "bed-ridden."
3. There is a progressive tendency to eliminate suffixal -en in some categories of adjectives and in verbs. In some instances where the suffix cannot be readily dropped, the entire word is replaced by other phrases.
4. The suffix -en in American English has ceased to be productive. Everything that has been said under points 1, 2, and 3 above,

militates against meaningful new formations with the suffix -en. To satisfy our curiosity concerning this particular point, we made a serious, though informal survey of names of products on supermarket shelves. That effort yielded only "Enden," the name of an anti-dandruff shampoo. It is not clear whether this word was formed in analogy to strong verbs, adjectives, or substantives, or whether any suffix awareness played any role at all in its formation.

5. All of the preceding conclusions have important implications for language teaching and language learning, both for English and other languages. Speakers of highly inflected or agglutinative languages in the process of learning English automatically focus on the morphology, among other things, for lexical as well as syntactic meaning. It becomes frustrating to have to find out all on one's own that -en, or many an other morpheme, has a variety of functions in English; and that in some of these functions it is progressively becoming obsolete. Such learners would be well served if teachers of English would give a systematic presentation or explanation of English morphology when the occasion is right; or if they would refer such students to appropriate reference works, from lists of prefixes to reverse dictionaries and anything else necessary. Teachers of English often do not realize how absolutely essential a clear understanding of morphology is to some of their foreign-speaking students.

   The opposite phenomenon presents itself when English-speaking students engage in the study of highly inflected languages. Extreme effort is often necessary both on the part of teachers and students not ever to lose sight of the important role morphology plays in such languages. Teachers here need to understand the reasons for their students' disregard of morphological functions. Teaching strategies have to be developed to bring about an awareness in the students that the syntax of highly inflected languages is incorporated to a large extent in their morphological systems. Focusing on total word recognition for the sake of gaining merely lexical information is not very useful when learning a highly inflected language. Appropriate teaching skills and strategies here assume paramount importance.

GLOSSARY

balden to make bald; to become bald
barken to dry up
bespoken ordered, commissioned, arranged for
betoken to signify; denote, express in words; to be a sign of
bounden made fast by tie, band, or bar; pregnant
bracken a fern; a large plant or clump of fern or bracken
catechumen a new convert under instruction before baptism
chasten to inflict disciplinary or corrective punishment on
cloven divided lengthwise; split, split into pieces
coven an assembly, meeting or company
cozen to cheat, defraud by deceit; to beguile
craven vanguished, defeated; a confessed or acknowledged coward
denizen a person who dwells within a country as opposed to foreigners who dwell outside its limits
dizen to dress or attire with flax, etc. for spinning
doyen a leader or commander of ten; the senior member of a body
flaughen a flake of fire or snow
glassen/glazen to fit with glass or glaze; made of glass
glotten to thaw gently
gluten a glutton; a viscid animal secretion; a gum or glue
Goshen the fertile land allotted to the Israelites in Egypt, in which there was light during the plague of darkness
greisen a granitic rock with crystalline-granular texture
hamesucken the crime of assaulting a person in his own house
hausen the largest species of sturgeon, of the Black and Caspian Seas.
herden variant of darden, hurden
hodden woollen cloth of a coarse quality such as used to be made by country weavers on their hand-looms
hoiden/hoyden a rude, ignorant or awkward fellow
kraken a mythical sea-monster of enormous size
lathen made of lath
leglen a milk pail
limen the limit below which a given stimulus ceases to be perceptible
limpen to belong, pertain, relate to
lippen to confide, rely, trust
linten of flax
louden to become or grow loud or louder
lumen an opening, passage or canal
magdalen a reformed prostitute
meeten to make meet or fit
midden a dunghill, refuse-heap
milken consisting of milk
mizen/mizzen a fore-and-aft sail set on the after side of the mizen-mast
mullen an herb of the genus Verbascum
parpen (in masonry) a stone which passes through a wall from side to side, having two smooth vertical faces; a stone squared or dressed for this purpose

paten a plate of precious metal used for the bread in the Eucharistic service
paven a dish or platter; paved; a grave or stately dance
platten/platen a flat plate of metal for various purposes
plumpen to make plump, swell out
rushen made of rushes
samisen a guitarlike instrument with three strings, played with a plectrum
sarsen one of the early inhabitants of southwestern England; one of the large sandstone blocks lying on the chalk downs in England; a Saracen
shotten shot out of the socket, as a bone; dislocated
sleeken to make sleek
sloven one who is careless of dress or negligent of cleanliness
smarten to smart
sodden to fill the substance with liquid; soak
soken (Old English Law): the district within which a soke was exercised; the privilege of taking a toll for grinding the grain of a soke
spilliken a small peg or pin, as of wood or bone, especially when used in playing certain games
tappithen a hen having a top-knot or feathery tuft on her head; a pewter measure for liquor, holding one or three quarts.
turfen made of turf, covered with turf
wealden a heavily wooded area
weazen to shrink, to wither
wizen to dry up, shrivel, wither
youthen to make youthful; to impart a youthful appearance

WHAT'S WRONG WITH "ALL AND ONLY"?

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Grammar with its rules has been, for thousands of years, an aid to learning a standard language different from whatever vernacular one has acquired through long exposure in childhood. It is still more an aid to learning a foreign language. For Greek -- i.e., specifically for Attic -- and later for Latin and other languages, some grammar-books were written that aimed at completeness. They were bulky enough to daunt any but the most ambitious or conscientious. To be sure, they did not contain in fact all the rules of any given language; but they did contain many not found in the briefer grammars, and a student introduced to a less adequate set of rules would often make mistakes through ignorance. From such experience came the ideal of a grammar so thorough as to preclude mistakes, a grammar setting forth everything necessary for perfect mastery of a language.

To eschew the utterly chimerical, it had to be acknowledged that no grammar, as distinct from an all-inclusive dictionary, can specify the limits upon the use of each and every word. For instance, **He's a beautiful man* violates no rule of grammar but rather what is called an idiom -- this one originating in the circumstances of medieval courtliness. The term *beauty* was borrowed from French to praise ladies; even now the association with one sex lingers so that the adjective *beautiful* is not normally applied to good-looking men, although it has come to be applied to many things without sex or regardless of sex.[1] While it is agreed that such peculiarities of words lie beyond the province of grammar, the other phenomena of a language appear amenable to rules, all of which can be stated. At least theoretically that is possible; in practice no grammarian or team of grammarians arrives at a full statement. The most successful attempts that I know of set out expressly to cover only a restricted class of phenomena, such as active and passive constructions in English, or concord of the verb with the subject.

Noam Chomsky deserves credit for stimulating, if not initiating, the recent interest in grammar as something more than a clarification of the particularities and difficulties of a language. At the beginning of his book *Syntactic Structures* (The Hague, 1957) he wrote,

> The fundamental aim in the linguistic analysis of a language L is to separate the *grammatical* sequences which are the sentences of L from the *ungrammatical* sequences which are not sentences of L and to study the structure of the grammatical sequences. The grammar of L will thus be a device that gener-

> ates all of the grammatical sequences of L and none of the ungrammatical ones (p. 13).

Further on he expresses the same idea more concisely:

> a device . . . which will produce all and only the grammatical sentences of English (p. 21).

> So far we have considered the linguist's task to be that of producing a device of some sort (called a grammar) for generating all and only the sentences of a language . . . (p. 85)

The principle has been widely adopted, usually without exact quotation but with the essential words, "all and only the sentences of a language" or "all and only the grammatical sentences."

I personally am unable to entertain such high claims for any actual grammar, even the best. Perhaps that is why I react adversely to the very wording of the claim: "all and only," indeed! Right there a rule of syntax is disregarded. For nobody would say **I picked all and only the ripe cherries within my reach* or **We invited all and only the neighbors on this street.* A normal way to put it would be *all the ripe cherries, and no unripe ones; all the neighbors on this street, and no one else.* The closest that normal English comes to *all and only* is *all the ripe cherries, and only those.* A pause before *and* marks the antithesis, besides heavy stress -- orally -- on the first syllable of *only. All and only,* on the contrary, is written with no comma before *and;* presumably the three words are pronounced without an internal pause.

"All and only the grammatical sentences of English" is probably original with Chomsky; but *all and only* was current before him, in the jargon of logicians as a short-cut for *all A, and only A.*[2] I say *jargon* advisedly; for it is a sociolinguistic fact that the specialists in many disciplines not only bring in technical words that baffle the uninitiated masses but also innovate in syntax and morphology. To call it *technical discourse,* rather than *jargon,* is to assume a neutral attitude, leaving out the antagonism felt by average people towards a kind of English that they must either strain or fail to grasp. I accept *jargon* as the appropriate term to bring out the *malaise* of fragmentation that interferes with the sharing of knowledge in spite of a common language.[3]

Almost inevitably, those who take an interest in a certain subject are concerned above all with understanding one another, regardless of the broader public. As the logicians go in for the most schematic analysis of sentences, no wonder they have taken up the economical innovation *all and only.* For however this juxtaposition may jar the ears at first, the meaning comes through well enough.[4] Then, since Chomsky's grammatical analysis of sentences is nearly as schematic as that of the logicians, it was natural for him to pick up an expression from their jargon. His disciples have of course drawn copiously upon him, as Christian writers draw upon the Gospel.

But other linguists ought to consider two questions: How important or essential to linguistics is a technical jargon? And

how does the existence of jargons affect the notion or definition of a language?

(1) My opinion is that not only linguistics but the social sciences as a whole are suffering from too much jargon. A lot of what they deal with is close to the experience of ordinary people and can be talked about in plain words. Moreover, many confusions and misunderstandings that such people labor under can be dispelled without recourse to unfamiliar terms. Phonology, to be sure, has more need for a special vocabulary, because the public knows -- apart from the letters of the alphabet -- just a few basic terms: *vowel, consonant, syllable, pause.* Many others are indispensable for clarification of the subject; e.g., *bilabial, palatalized, deaspiration, affricate, alveolar.* For the rest of grammar, a sizable apparatus of terms is long established, through the teaching of composition and the correction of students' errors. It is gradually being supplemented by innovations, as a small part of the ones introduced succeed in improving communication and so get used by many individuals. That hardly differs from the process by which any sort of vocabulary is added to the language.

No doubt the description and analysis of more and more exotic languages will require new terms. The only restraint that I ask the linguists to accept is that they should use plain, familiar words and straightforward English syntax as much as possible. They will even understand one another better that way.

(2) Anyhow there are, and will continue to be, many jargons. Each of them has not only a vocabulary that the English community at large does not understand, or half-understands at best. Besides that, a jargon takes some liberties with English grammar. As a language is, by nature, liable to change, a linguist should not in principle be surprised by any deviation, wherever it may turn up. Still, those deviations which remain nearly confined to a certain jargon, instead of being absorbed into the language as a whole, constitute an interesting category.

A trustworthy grammar, while concentrating upon the most generally accepted usage, should also pay some attention to conspicuous oddities. Whatever is used by English-speaking people is, in a sense, part of the English language. But it is utterly impractical to take note of all marginal phenomena. For instance, the English-and-Spanish bilinguals are liable to toss a Spanish word or phrase into many an English sentence, when they converse with one another. Often it is because no virtually equivalent English expression comes to mind; moreover, in such a social situation they have no motive for minimizing their recourse to Spanish. Shall we then treat as English phenomena or data the thousands of Spanish words that creep into their English speech, besides the structural modifications of English phonology, morphology, or syntax under Spanish influence? No, not unless we are describing the English dialect of those bilinguals. Otherwise such features come under the purview of English only when and if they spread to people not in close touch with Spanish.[5]

It follows that the English language (or the Spanish language, for that matter) is a sort of abstraction, from which many facts are ruled out as irrelevant. That is intellectually legitimate, provided it does not blind us to the social nature of language, which in real life is exposed to all kinds of particular influences, external or internal. Any English-speaking person that knows another language, or a regional English dialect or creole, or literature or songs from past centuries, may have occasion to bring something from there into his current speech or writing; or he may innovate from no discernible source. Some idiosyncrasies will catch on within a circle of acquaintances, and a few go further. There is no precise point at which something becomes part of the central core of English. Neither is there a precise point at which an obsolescent expression ceases to belong to that core.

All and only is characteristic not of English but of a limited English jargon, at odds with the normal language in this respect. What commends some innovations to the public, while others fail to enter the main stream? A partial answer is that if an expression appears to "hit the nail on the head," people will take it up. To that extent, at least, a language gains from the intelligence and open-mindedness of its users. They are selective, and many novelties leave them unimpressed. *All and only* has made little headway; the need for this combination is slight, since the meaning of *all* is logically incompatible with anything additional. Though language is far from being bound by any strict logic and some of us still use the old-fashioned phrase *all and sundry*, the parallel does not avail to make *all and only* sound right.

Yet it is available as a stylistic choice, apart from the jargon where it is at home. Just as an author with a certain audience in mind may draw upon a foreign language, he may draw upon the odd corners of English. The only practical limit is intelligibility, and within that the main criterion is aptness. For no language is impervious. Conforming to the established pattern insures communication, but enriching or diversifying it may enhance communication.

A more familiar anomaly of syntax is the combined conjunction *and/or*. The new supplement to the *Oxford English Dictionary* (1972) cites it as early as 1855. The first examples are in a context of commercial law: "The parties were to 'load a full and complete cargo of sugar, molasses, $\underset{\text{or}}{\underline{\text{and}}}$ other lawful produce.'"[6]

To connect only two items the old, established way would be *sugar or molasses, or both*, if legal precision were required[7] -- the ordinary expression *sugar or molasses* not being exact enough while *sugar and molasses*, strictly interpreted, would exclude the possibility of one without the other. The *or both* construction would not do after three or more items, nor after two if the second were indefinite in contrast to the first: **molasses or other lawful produce, or both*. Under those circumstances the innovation *and/or* filled a real gap, however minute, in the semantic coverage of English syntax.

But it has spread mainly as a mannerism, ill thought out, among the scholarly professions -- especially the lawyers. Many times the simple conjunction *or* would make better sense, besides being more graceful. And although we have grown accustomed to *and/or*, it remains glaringly uncolloquial. Only one person in my acquaintance uses it in conversation; and since English happens to be his third or fourth language, I suspect that his learning of English was affected too much by technical books and articles. (He would have said "books and/or articles.")

The syntactical choices and restrictions that govern certain classes of words are enormously complex. To illustrate the pitfalls I quote from an abstract of a paper read at a previous conference of LACUS: "The beginning approximately 800 words of each book. . . ." This objectionable sequence was pieced together from two normal syntagmas: *the beginning words of each book* and *approximately eight hundred words*. Hardly anyone competent in English would try to place the rough numerical expression *about eight hundred* or *around eight hundred* after the definite article, with or without an intervening adjective: **the about eight hundred words* is obviously wrong, and so is **the beginning about eight hundred words*.

The approximately eight hundred words at the beginning of each book would be tolerable, if not elegant, since *approximately* is not just a fancy synonym for *about*. Its morphology makes it an ordinary adverb, whereas *about* and *around* have some properties and limitations of prepositions. The worst part of saying *the beginning approximately eight hundred words* is that when *beginning* functions as an adjective it should, like other participles, come right before the noun, not before the cardinal number. We say, for instance, *The two opening words are printed in small capital letters*. An alternative is *the first two words*, but then the position of the modifiers is reversed. The same applies to *the next two words*, or *the last two words*, but *the two closing words*.

Packing too much into a noun-phrase is a common fault of style, even where no rule of syntax is violated. Often the cumbersome expression can be improved without drastic rephrasing or any sacrifice of meaning. Let's try *the first eight hundred words, or so, of each book*.

Opinions will differ as to whether linguists owe the world a better model of how to write English than other scholars furnish. My own thought is that linguistic studies not only result in more knowledge but also lead us to delight in the ways of language. Or perhaps such delight is what made us take up linguistics in the first place. Then it becomes natural to notice and remember the different possibilities of verbal expression, and to develop a personal taste in favor of some rather than others. Every individual's taste contributes a little to the norm of the whole community, and some are more influential -- for a great variety of reasons, including superior knowledge and judgement in matters of language.

Notes

1. The *Oxford English Dictionary* quotes an idiosyncratic passage from 1642: "Lewis, Prince of Tarentum, one of the beautifullest men in the world." There is nothing incongruous, however, in saying *a beautiful stallion,* nor (a fortiori) *a beautiful tanager,* which refers actually to the male as the female is quite plain.

2. For this information I am indebted to my friend and colleague, John Wilcox, professor of philosophy at SUNY-Binghamton. In modern symbols *all and only* is represented thus: $(x)[L_x \equiv H_x]$

3. The original sense of *jargon,* long obsolete, was 'the twittering of birds,' which communicate with each other while we hear and can mimic to some extent, but without understanding.

4. From Aristotle on, the logicians have taken liberties with language. On the basis of ὁ ἵππος 'the horse' and the indefinite ἵππος τις 'some horse,' he or his school made up ὁ τίς ἵππος 'the particular horse, this or that horse' *(Categ.* 1B.4-5); for in philosophic discourse ὁ ἵππος would usually refer to 'the horse' as an entire species. Similarly ὁ τίς ἄνθρωπος 'the particular man' (1B.4), τὸ τί μέγεθος 'the particular tallness' *(Pol.* 1283A.4). The grave accent on τίς or τί, customary in manuscripts and editions, is just a convention.

5. This criterion cannot be applied universally. For example, so few Welsh monoglots remain (apart from young children) that the language is now spoken mainly by people fluent in English also. English influence on Welsh is accordingly essential, not marginal. To be sure, some writers stick to the purest Welsh; but they cannot then represent ordinary conversation realistically.

6. Quoted from Law Jrnl. Reports XXIV. 11. Excheq. 199/2; *and/or* was overlooked in the original compilation of the *OED.*

7. As in *punishable by fine or imprisonment, or both.*

A LINGUISTIC OVERVIEW OF THE NIGEL TEXT GENERATION GRAMMAR

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ABSTRACT

Recent text generation research resembles recent research in synthesis of vaccines. The research is designed to construct entities which previously arose naturally. This constructive approach creates practical and theoretical benefits.

Our text generation research has produced a large systemic English grammar, which is embedded in a computer program. This grammar, which is called Nigel, generates sentences. It is controlled by a semantic stratum which has been added to the basic systemic framework.

This paper describes the program, which also is called Nigel. It identifies augmentations of various precedents in the systemic framework, and it indicates the current status of the program. The paper has a dual focus. First, on Nigel's processes, it describes the methods Nigel uses to control text to fulfill a purpose by using its new semantic stratum. Second, concerning Nigel's interactions with its environment, it shows reasons why Nigel is easily embedded in a larger experimental program.

Although the paper does not focus on Nigel's syntactic scope, that its scope is non-trivial is indicated by the fact that all of the sentence and clause structures of this abstract are within that syntactic scope.

1 Progress in Immunology: Synthetic Vaccines

In February of this year, Scientific American described a breakthrough in medical science, the laboratory synthesis of vaccines against flu and other virus diseases [Lerner 83]. Ever since vaccines were conceived, research on vaccines and immunology has focused on natural substances and their effects. Now it has become possible to synthesize vaccines to fight many common diseases.

In synthesizing vaccines, scientists had to supplement the established methodologies. In particular, they had to develop

methods of vaccine construction to supplement existing methods of vaccine identification and description.

When the work on synthesis began, there was a substantial amount of evidence to suggest that the task would be overwhelmingly complex, and, in a practical sense, impossible. The Scientific American article describes how they did it. They worked with models at the molecular level, a finer level of detail than that of most of the preceding work. One of the key stages in the process came when they discovered how to cause synthesized vaccine elements to express the many abstract attributes which by which vaccines had previously been described (without reference to the molecular level.)

> "[We found that] ...synthetic peptides can mimic the distinctions revealed by serologic studies; in designing synthetic vaccines, one will be able to take advantage of serologic evidence..."

The key evidence of success, of course, is that the vaccines work. Out of voluminous and detailed reasoning about molecules, their shapes, and their interactions, come chemicals that actually prevent the infections that they are supposed to prevent. The success of the vaccines validates the work at the molecular level, and also validates the particular theories at higher levels on which it was based. When a synthesized vaccine is ineffective, it points to inadequacies in the supporting theories.

So, work aimed at creating synthetic vaccines has also created a powerful new tool for scientific inquiry. Its worth can be fully justified on its scientific benefits alone, or on its practical benefits alone.

2 Penman: Constructive Research in Linguistics

The work described in this paper is another variety of scientific work in a constructive methodology. In this case, the items being constructed are texts rather than vaccines, and the test of effectiveness involves reading the texts rather than resisting a disease. Despite the differences, the work on synthetic vaccines helps us to understand current work on text generation.

In text generation, the focal task is to create a text, in fluent natural language (often English), in response to some particular need. The trick is to do so using only the explicit knowledge of language specified by one's linguistic theories, rather than using the skills of a person. Research of this sort

has been carried out in a scattered fashion for over a decade, generally using a computer as the site of synthesis and as the repository of the most detailed level of theory [Davey 79, Mann 81, Mann & Moore 80, McKeown 82, Mann & Matthiessen 83a]. Computers here fill the role of molecular genetics for the vaccine work: they are a relatively new technology, enabling the work in a practical sense but not in any way fundamental to it.

Text generation research uses a constructive methodology, but it is vitally dependent on prior descriptive work. Because it is a constructive approach, voluminous detail is required; descriptive research, with its heavy reliance on processes of abstraction, eliminates details. Descriptive research can proceed in several independent directions to unreconciled conclusions; constructive research requires extensive reconciliation of the contributing theories. Just as for the vaccines, the best validation of the constructive theory is the observable effectiveness of the synthesized results.

Several years ago, we began work on a new text generation system, named Penman, designed to write texts a few paragraphs long. A previous round of research had led to a computer program which was able to write a limited range of two-paragraph texts, but which had several serious shortcomings, especially in the narrow rigidity of its grammar.

We therefore wanted to include in Penman a significant, linguistically justified grammar. Now, several years later, we have such a grammar, named Nigel after Halliday's learner [Halliday 75]. This paper passes over the parts of Penman devoted to invention, to text planning and to retrospective improvement of the text, and concentrates entirely on Nigel, the grammar.

3 Nigel: Penman's Grammar

The grammatical framework of Penman is the Systemic framework, begun by Michael Halliday in the late 1950's.[1] It draws

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[1]The work on Nigel would not have been possible without the active participation of Christian Matthiessen, and the participation and past contributions of Michael Halliday and other systemicists. This research was supported by the Air Force Office of Scientific Research contract No. F49620-79-C-0181. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of the Air Force Office of Scientific Research of the U.S. Government.

on a wide range of prior work, including [Halliday 76, Hudson 76, Halliday & Martin 81, Fawcett 80, Berry 75, Berry 77, Halliday & Hasan 76] and others. In order to reconcile the various fragments of grammar and augment them, all of the prior work has been altered in some way, sometimes by a simple notational shift, and sometimes by thorough re-representation.

I will describe Nigel in a series of stages, in effect working backward through the generation process from the level of lexical items to the level of conditions in Nigel's environment which affect the particular text produced. The whole discussion will be about Nigel's role in generating single sentences, because Penman is designed to plan text down to the sentence level, including the relations that each sentence will express, and then to have Nigel execute each sentence plan independently.

3.1 Lexicon

Nigel's lexicon is deliberately oversimplified, because we felt that the limiting technical problems were elsewhere. It is a lexicon of independent lexical items, without morphology. The lexicon is well elaborated for lexical features: there are over 100 distinct lexical features, and the lexicon has items representing over 500 distinct combinations of lexical features. However, these figures are not particularly significant, since the lexicon has not been extensively developed or tested.

3.2 Realization

Nigel builds syntactic structures by a set of activities usually called "realization" in the systemic framework. They are distinct from activities which specify the characteristics of a syntactic unit, formally termed <u>grammatical features</u>. Each syntactic unit is first developed as a set of grammatical features, which realization converts to a syntactic structure. All of the control over what is built is exercised during the creation of the feature set; there is no optionality or syntactic variability in realization.

In Nigel, <u>all realization is realization of single features.</u> Each grammatical feature may have one or more <u>realization statements</u> associated with it, each consisting of a <u>realization operator</u> and a number of operands. Each realization statement makes some change or introduces some restriction on the structure being produced.

There are three groups of realization operators: those that build structure (in terms of grammatical functions), those that

constrain order, and those that associate features with grammatical functions.

1. The realization operators which build structure are Insert, Conflate, and Expand. By repeated use of the structure building functions, the grammar is able to construct sets of function bundles, also called fundles. None of these operators are new to the systemic framework.

2. Realization operators which constrain order are Partition, Order, OrderAtFront and OrderAtEnd. Partition constrains one function (hence one fundle) to be realized to the left of another, but does not constrain them to be adjacent. Order constrains just as Partition does, and in addition constrains the two to be realized adjacently. OrderAtFront constrains a function to be realized as the leftmost among the daughters of its mother, and OrderAtEnd symmetrically as rightmost. Of these, only Partition is new to the systemic framework.

3. Some operators associate features with functions. They are Preselect, which associates a grammatical feature with a function (and hence with its fundle); Classify, which associates a lexical feature with a function; OutClassify, which associates a lexical feature with a function in a preventive way; and Lexify, which forces a particular lexical item to be used to realize a function. Of these, OutClassify and Lexify are new, taking up roles previously filled by Classify. OutClassify restricts the realization of a function (and hence fundle) to be a lexical item which does not bear the named feature. This is useful for controlling items in exception categories (e.g. reflexives) in a localized, manageable way. Lexify allows the grammar to force selection of a particular item without having a special lexical feature for that purpose. It is Preselect which makes the grammar recursive, since Preselect requires choosing a particular grammatical feature in a lower-ranked pass through the grammar.

In addition to these realization operators, there is a set of Default Function Order Lists. These are lists of functions which will be ordered in particular ways by Nigel, provided that the functions on the lists occur in the structure, and that the realization operators have not already ordered those functions. A large proportion of the constraint of order is performed through the use of these lists.

Published descriptions of the use of ordering in the systemic framework leave substantial room for interpretation. Programming the ordering operations of Nigel has convinced us that systemic ordering is in fact a fairly complex matter. The (as yet unpublished) ordering algorithms of Nigel constitute a definite and testable proposal for the meanings of the realization operators for ordering.

3.3 Choice: Systems and Gates

Nigel has systems of alternatives, called systems as in the systemic tradition (to the confusion of the computational tradition.) The alternatives are grammatical features. Each system also has an entry condition, a logical expression of grammatical features. The entry condition must be satisfied in order to enter the system, i.e. to have the set of alternatives available for choice. When a system has been entered, one of the alternative features must be chosen.

In addition to the systems there are Gates. A gate can be thought of as an entry condition which activates a particular grammatical feature, without choice. These grammatical features are used just as those chosen in systems. Gates are most often used to provide a feature to be realized, in response to a collection of features.[2]

3.4 Choosing

The systemic literature has many discussions of the oppositions of language, the direct alternations represented in systems. There is much less discussion of which alternative is most suitable in particular cases. Of course for text generation, making good individual choices is an essential activity, and so there must be some representation of how choices in the grammar are to be made.[3]

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[2]There are no realization operations which depend on more than one feature, and no rules corresponding to Hudson's function realization rules. The gates facilitate eliminating this category of rules, with a net effect that the notation is more homogeneous.

[3]We find it useful to equivocate on the term "grammar," using it sometimes to represent the usual varieties of entities represented by systemic notation, and sometimes to include as well the mechanisms described below. Context will always disambiguate.

In order to specify explicitly how choices are made, a new definitional stratum has been added to systemic notation. For each system, a formally defined process called a chooser or choice expert is created. Each such process consists of steps, potentially of several kinds. The principal kinds of steps are information gathering, discrimination between kinds of conditions, and choice. When a system is entered, the corresponding chooser process is executed, yeilding a choice among the system's alternatives.

By defining choosers in this way, we can make explicit what particular choices depend upon, and we can examine whether particular natural examples conform to the conditions of choice which have been defined.

The activity of defining choosers often reveals regularities (or irregularities) which the grammar does not represent. Several choosers may depend in the same way on the same determinative condition. Or a notion such as markedness may turn out to represent very different conditions in its various grammatical systems. Defining choosers typically leads to local refinement of the grammar, along with strengthened justification for the particular form used.

3.5 Inquiry

It would be possible to allow choosers to have some sort of unrestricted access to the knowledge which surrounds them, but this would be unsatisfactory as theory and unmanageable as a practical text generation resource. Instead, Nigel has a very simple, highly restricted method for choosers to gain access to the information they need. Choosers gain information to guide their work only by issuing inquiries stated in a simple inquiry language.

The boundary of the grammar separates two nearly-independent symbol systems. Outside of the boundary, in the environment, there is knowledge of what needs to be said, including both general knowledge and the text plan. Inside the boundary are the grammatical features, grammatical function symbols, chooser definitions, system and gate definitions, and realization statements. All of these are beyond reach of the environment, and cannot be designated for manipulation by it. Conversely, the symbol system outside of the environment is not directly available to the grammar. When the grammar needs a symbol to use in some later inquiry, such as a designation of the agent of a process so that it can inquire whether the agent is multiple, it asks for a temporary symbol for this purpose. These symbols are discarded once the unit has been built, and the separation of symbol systems is thereby maintained.

(Lexical items are exceptions to these remarks about symbol system separation. The choosers assume that associations are maintained between the relevant knowledge and lexical items, so that, for example, the grammar can elicit a set of denotationally appropriate terms as candidates to serve as the head of a nominal group.)

This way of defining and using an inquiry language has important practical and theoretical benefits. It permits development of the grammar and its semantics while avoiding two traps:

1. Defining the grammar's semantics in terms of particular conventions of knowledge representation;

2. Defining the grammar's semantics relative to particular syntactic structures, rather than their functional import.

The first of these is particularly important if Nigel is to be used in other artificial intelligence research projects. Since Nigel can be independent of particular knowledge representation formalisms, the rapid progress being made in knowledge representation will not render Nigel's definitions obsolete.

3.6 Environment

The environment is defined as the collection of symbol systems beyond the grammar's boundary. It consists of two rather different collections of information. Informally, they are

1. the Knowledge Base: information which existed prior to the demand for which text is being generated, and

2. the Text Plan: information which is created in response to that demand.

Nigel leans heavily on both. It presumes that the text plan contains definite intentions about the ideational, interpersonal and textual functions of the unit being generated; much of the ideational information comes from the knowledge base.

4 The Inquiry Stratum as a Semantics

Although definitions differ widely, the term "semantics" is usually used to represent some sort of specification of correspondence between elements of a linguistic system and

elements of another system distinct from it. Taken this way, there are two senses in which the inquiries of Nigel constitute a semantics.

First, given a grammar of a language, including choosers, the collection of inquiry operators used in the choosers constitutes a specification of what can be expressed in syntactic structure. For example, multiplicity, intention to emphasize, and time precedence are identifiably expressed in Nigel's grammar of English. And we can also say, on the basis of the collection of inquiry operators, that English tense is indifferent to the contrast between moments and intervals. In this sense, the collection of inquiry operators provides a semantics of the collection of syntactic structures.

In the second sense, given the particular choosers, systems and realization statements of a grammar, we can construct the mapping from particular conditions, i.e. particular collections of environmental responses to inquiries, to strings of symbols which they yield. This is a semantics of the grammar of particular utterances.

Note that in both cases, it is a semantics of the grammar which is specified, rather than a semantics of the language as a whole. Lexical aspects are specified in only a very rudimentary way, and the semantics above the level of the largest grammatical unit is likewise only slightly constrained. These limitations can be regarded as advantages, because they provide a principled factoring of a very complex field of inquiry.

5 State of Development

The generation mechanisms of Nigel have been programmed and tested. Choosers for about two thirds of its 200-odd systems have been defined. Whenever a new cluster of choosers is defined, there is an inevitable reexamination of the systems of that region, and their justification. As a result, Nigel as a whole is evolving toward an increasingly homogeneous grammar in a fairly consistent definitional style.

When there are choosers for all of Nigel's systems, many new tests will become possible. They will involve generating units on demand, attempting to imitate natural examples, and characterizing syntactic units by the demands for which they were produced. Such tests, while vital and informative, are local to the grammar. They cannot show how adequate the grammar is as an element of a text generator.

We look forward to eventually mating Nigel with a programmed text planner, and later with programmed search processes (for invention) and text improvement processes as well. Only then can Penman be tested as a synthetic vaccine is tested—by judging its operational results. Seeing the products of other text generators, we expect that Penman will eventually generate very high quality text, and that the process of defining the generat will be filled with exciting and informative research.[4]

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HOW TO MAKE GRAMMATICAL CHOICES IN TEXT GENERATION

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1 INTRODUCTION

In a functional account of language, semantics and grammar should be part of a model of communication: it is relative to this model that they are functional, i.e., that they can be motivated and understood in functional terms. Communication is a process: the central communicative construct is text. Text is a process; it is "a sociosemantic process" (see [Halliday 1978 78], p. 139). Communication is inherently interactive and there are two aspects to it: the process of producing text, text generation, and the process of constructing an interpretation, text comprehension. Ultimately, we want to account for both, but as a research strategy we can factor this task and construct two models, one for production and one for comprehension. These two models can then be used in designing a general model of communication. Obviously, this model will not just be the sum of the two separate models; it will entail revision, rejection and synthesis. The purpose of this paper is to present a contribution to a model of text generation.[1] If we assume that text is created to achieve goals, i.e., in a sense, any given text is a realization of a number of goals, one of the problems that can be identified for a model of text generation is the problem of controlling the process of grammatical choice purposefully. We can pose the following question:

How are grammatical choices made purposefully as part of the process of text generation in the creation of a text? Finding a solution to this problem is a challenge and a significant research task. Having a solution is critical to the success of any significant future text generation systems. At present there is no general and widely known solution to the problem of how to make grammatical choices. This paper presents a notation for stating how to make appropriate choices in the grammatical component (or stratum; grammar for short) of a text generation system. The type of grammar used in our research on text generation is **systemic grammar**.[2]

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[1]Text generation is a research task in computational linguistics, see particularly [Mann 81], and computational tools can be used in the research, as they have in work by Davey and in our work; cf. [Davey 79] and [Mann 83]. They are helpful for testing and because they demand full explicitness, but are not necessary for research on text generation.

[2]This research was supported by the Air Force Office of Scientific Research Contract No. F49620-79-C-0181. The views and conclusions contained in this paper are those of the author and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of the Air Force Office of Scientific Research of the U.S. Government. The paper draws on work being carried out by W. Mann, M.A.K. Halliday, to both of whom I am greatly indebted for many insights, and myself. In particular, this paper rests on Halliday's representation of the grammar of English tense. I am very grateful to Bill Mann for comments on various versions of this paper. Responsibility for all errors rests entirely with me.

A notation for making grammatical choices is a semantic notation of grammatical choices. since it is a notation for stating what the choices mean. Any account written in the notation for a particular area of grammar is then a semantics for that area of grammar. One outcome of the enterprise is thus a factoring of the notion of semantics into (i) a semantics of grammatical choosing and (ii) other kinds.

1.1 The process of grammatical choice: decomposition into systems

The problem of purposeful grammatical choice entails another problem: How do we conceive of, organize, and state grammatical choice? (This is, of course, a question about how to handle paradigmatic organization.) Fortunately, this problem has already been addressed by systemic and stratificational linguists: Grammatical optionality can be handled by providing an account where each minimal grammatical choice point (system) is identified; this is the systemic approach,[3] which will be described below. In order to handle grammatical choice (optionality), we have to find a way of stating how to make an appropriate choice at each choice point. We will assume (without justifying the assumption here) that if we have an account of how to make a choice at each choice point, we also have an account of how to handle grammatical choice in general (cf. [Mann 82]). So the task can be reduced to the task of stating how to make the right choice at a single choice point. This means that systemic grammar yields a **decomposition** of the task of choosing into systems. In addition, systems are organized into a network (the representation of the paradigmatic organization of grammar) and this organization also partly organizes the process of choosing.

1.2 The process of semantic choice: choosers

An account of how to choose in a system will be called a **chooser** (or choice expert). A chooser is a process that is composed of one or more steps that lead to the determination of which grammatical option to choose at a choice point. The decomposition of the task of handling grammatical optionality which the use of a chooser for each minimal grammatical choice point leads to is quite powerful. Each pair of a system and its chooser represents an account of choice on two strata: grammatical choice and semantic choice. I will refer to the theory of choosers as the chooser framework.

1.3 Tense choosers

The general problem of handling grammatical choice will be mapped onto the specific and concrete problem of controlling the grammar of English tense. (For a general account of the "anatomy" of choice, see in particular [Mann 82].) For a particular clause of English, ... *who had been a nurse* ..., I will show how choosers can be applied to the grammatical tense alternations that English grammar offers us. By making the right distinctions, the semantics of tense formulated in terms of this chooser framework gives us the appropriate tense selection.

---

[3]The terms *system* and *systemic* are used in a special sense in the systemic approach to language, Systemic Linguistics. Following Firth, who developed linguistics in Britain from the 1930s, systemic linguists use a system to represent a choice between two or more options. Each choice point in the grammar is represented by a system. The concern with choices and their representation by systems is one of the characteristics of Systemic Linguistics. Others include the view of language as a communicative tool.

I have picked the area of tense, because it is sufficiently complex (some would even say messy) to demonstrate the capabilities of the chooser framework. Making appropriate tense choices is not a trivial task. (For a more detailed account than is possible here, see [Matthiessen ar].) So in addition to simply illustrating the chooser framework used to account for a particular area of grammar, the tense example will serve to show how choosers together with a particular type of grammar, systemic grammar, serve to factor and make manageable tense, which has long been seen as one of the most intricate areas of English. Also, tense is an area where Halliday's analysis shows very well how systemic grammar decomposes the choosing problem in an interesting way; see e.g. [Halliday 76] and [Halliday 82].[4]

1.4 Novel contributions

As I have mentioned, the grammatical framework used in our work is that of systemic grammar. Consequently, the account of how to make grammatical choices is a proposal for systemic linguistics. In particular, it can be thought of a partial theory of systemic semantics, since "how to make grammatical choice" can be seen as semantic choice. However, to say that the account is intended as a systemic proposal is not to restrict it in scope or applicability. Rather, it is hoped that it can be of interest in any tradition where stratal organization and the representation of both paradigmatic and syntagmatic organization of grammar play important parts. Thus, there is a clear link to stratificational linguistics, for instance.

The chooser framework constitutes a completely new development by Mann and Matthiessen in the context of the design of a particular text generation system (Penman) for a text generation grammar of the systemic kind (see [Halliday 69] etc.; cf. [Winograd 72], [Winograd 82], and [Davey 79]). The grammar and its chooser mechanism (together called Nigel) are not, however, dependent upon Penman; they constitute a general sentence generating component for text generation systems.

1.5 Organization of the discussion

To start with, I will make more precise what we understand by text generation (section 2). Next, I will introduce tense as the illustrative grammatical region to be used as an example of the application of the chooser framework (section 3). The rest of the paper (sections 4 through 8) deals with a presentation of the chooser framework with the help of the tense example.

2 GRAMMATICAL CHOICE IN TEXT GENERATION

There has been fairly little work done on text generation.[5] One of the consequences is that the process of text generation is not very well understood as a research task. There is no established list of problems that have to be solved. I will not deal with this task of factoring text generation into research problems. Instead, I will merely assert that the process of making grammatical choices is a research task that emerges from such a factoring. I will give some credibility to this assertion by giving an indication of how grammatical choosing is part of text generation.

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[4] Syntagmatic formulas in this area, such as *Aux --> Tense (M) (have - en) (be - ing)*, do not give us a handle on the choosing problem. Halliday's systemic account does.

[5] This is true of both linguistics and computational linguistics within Artificial Intelligence. The emphasis has been on discourse analysis and comprehension.

2.1 Four processes of text generation

Following an expository design for text generation systems by William Mann (see [Mann 83]), we can factor the generation process into four sub-processes called **Acquisition**, **Planning**, **Sentence generation**, and **Improvement**, each one of which is supported by resources. The first three work together to generate text. Improvement monitors the processes and criticizes the result and proposes remedies to improve it. Here we are only concerned with the first three.

Assume that our text generator is faced with the need for a text. There is a need to write a short biographical section about a particular person, Mrs. Jane McCluster. Based on this need, Acquisition searches for relevant information that might be included in the text or influence its organization. The knowledge support for this search is the **knowledge base** of the generator. The relevant information includes the facts that Jane is married, that she was a nurse before her marriage, that she grew up in town, that she married a farmer, that Jane had nursing experience, and so on.

Next, Planning responds to the information searched out by Acquisition and to the goals for the text derived from the initial text need. Planning uses a rhetoric for text organization. Planning's response is a **plan** for the text to be generated. The plan is global in scope, but it goes down to a level of detail where its units can be expressed by independent clauses. Here, the biographical section is the introductory part of a plan for a short story in which Jane plays an important role.[6] There is a local plan for what can eventually be worded as *Jane McCluster, who had been a nurse before she married, started a farm within a month of arriving*. The aspect of it that is relevant for our discussion is the plan of the temporal relations represented by *who had been a nurse*: Apart from the time of telling the story, or NOW as we will call it, we need to keep track of two times, viz. the time at which Jane started the farm (which falls within the general time of the story), STORY-TIME, and a time before the general time of the story, the time at which Jane was a nurse, NURSING-TIME. An important goal that the clause *who had been a nurse* is intended to achieve is to tell us that Jane had had nursing experience before she started her nursing activities at the farm that the story goes on to tell us about. (Consequently, the tense combination will have to be chosen to signal that one step further back in time is taken, i.e., further back from STORY-TIME.) Figure 1 presents the time relations to be expressed diagrammatically.

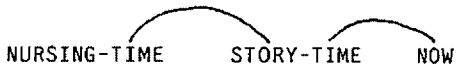

Figure 1: Time relations to be expressed

Based on these plans for clauses created by Planning, Sentence generation produces a clause for each planned clause. The resource for Sentence generation is a **grammatical component**, i.e., a grammar.

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[6]For the example, I used Doris Lessing's "Little Tembe" from her African Stories. In general, short stories are far beyond explicit theories of text generation in various types of complexity, theories that can lead to computational models.

2.2 Sentence generation

What does it take for Sentence generation to produce clauses with the help of its grammar? Here we can identify the problem addressed in the paper. A substantial part of the question we just asked is our initial question: How are grammatical choices made as part of the process of text generation? Briefly, the answer is that for each system of choice alternatives there is a corresponding process of choosing. This is the process of choosing mentioned in the introduction that we call a **chooser**. The grammar consists of hundreds of systems. Consequently, Sentence generation makes use of hundreds of choosers, one for each choice point.

Each chooser appeals to the **environment** of the sentence generation component in order to make an appropriate choice. The environment is the knowledge base and the text plan. The temporal relations diagrammed in Figure 1 are all in the environment, beyond choosers and grammar (or above, to use a vertical stratal metaphor). However, as we will see, choosers access this temporal information by presenting inquiries to the environment. It is on the basis of responses to these inquiries that choosers can direct appropriate choices of tense features to grammar. This aspect of sentence generation is summarized in Figure 2.

```
PLAN:        Time relations
                   ↑
-------------------|-------------------------------------------
                   ↓
CHOOSERS:    INQUIRIES about
             times

             CHOICE of tense
             features
                   ↑
-------------------|-------------------------------------------
                   ↓
GRAMMAR:     Tense features   --REALIZATION--->  Tense structure
             in systems                          of functions

-----------------------------------------------------------------
```

Figure 2: Partial organization of Nigel

The figure can be thought of as representing a stratum of grammar, with grammatical choice, and a stratum of semantic choice, the process of controlling grammatical choice. Above this latter stratum, we find plans in the environment. As I have already indicated, the environment has its own organization. However, the important point for the present picture is that all that is above the level of choosers.

As is indicated in the figure, the paradigmatic organization of the grammar, represented by systemacized features, is related through realization to the syntagmatic organization: Tense features are realized by fragments of a functional tense structure. For example, the selection of the feature <u>future</u> ultimately leads to the presence of *will* in the structure being built.

Before describing choosers in more detail, I will introduce the area of grammar to be used for illustration, tense. This will also give me an opportunity of presenting some aspects of the systemic grammatical notation that we will need to understand how choosers work.

3 TENSE, THE AREA OF ILLUSTRATION

3.1 Grammar: tense resources

The part of the grammar of English tense that will be used in the illustration of the chooser framework is given in Figure 3. Each tense choice is represented by a system and the choice options by grammatical features like past and future. As the figure shows, the individual tense systems form a network of tense choices. For instance, once we have made a selection in the system SECONDARY TENSE, we proceed to SECONDARY TENSE TYPE, making a new choice. The loop back in the figure for the system SECONDARY TENSE means that it is possible to have a series of secondary tenses: After primary tense comes secondary, then tertiary, quaternary, and quinary. (For certain reasons, it is difficult to go beyond quinary tense, but not impossible; cf. [Halliday 76].) In systemic notation, these tenses can be called α (primary), β (secondary), γ (tertiary), δ (quaternary), and ε (quinary). The systems of secondary tense and secondary tense type can be thought of as schemas, standing for the specific instances of looping through them (as the loop back suggests). The first instance is secondary tense (or second order tense), the second is tertiary (third order) tense, and so on.

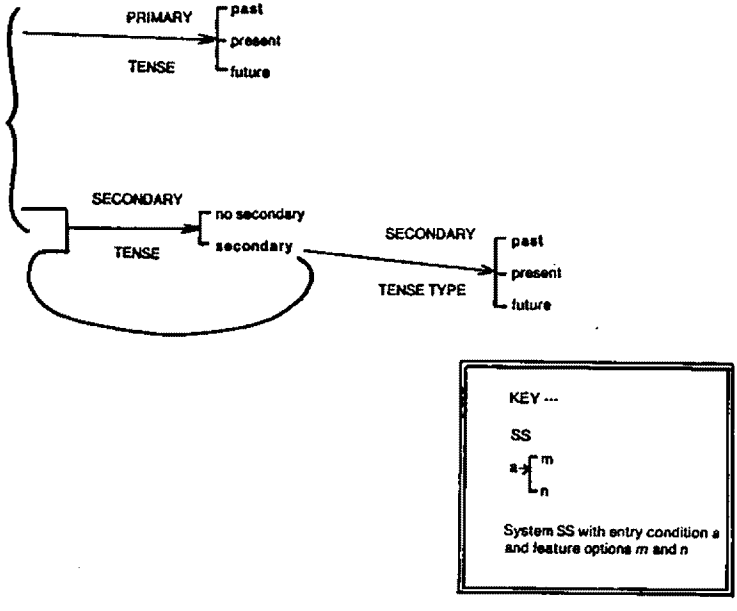

Figure 3: The grammar of tense

The network represents the choice organization of the grammar. Choices are re-expressed by realization processes in structural terms. The realizations of the tense terms for primary tense and secondary tense are given in the table in Figure 4. I will not go into the design of realization statements here, nor into the functional nature of the resultant structure; there is general discussion in e.g. [Matthiessen 83].

	past	present	future
primary	-ed	0	will
secondary	have ... en	be ... ing	be going to

Figure 4: Tense markers

The tense expressions that the grammar in Figure 3 can generate are all exemplified as variants of *who had been a nurse* in Figure 5.[7] The table determines two considerations for our tense chooser task, the selectivity of the task and the completion of the task.

1. **Selectivity.** The range of tense expressions shows what our tense choosers have to deal with: The choosers have to be clever enough to choose so that the outcome is *had been* rather than *has been*, *was*, or any of all the other competitors.

2. **Completion** We will have completed our task of finding the appropriate tense combination when we have reduced the table in Figure 5 to a single expression.

3.2 Choosing tense in conformity with time relations

For each system, its chooser chooses a feature according to conceptual distinctions in the environment. As we have already seen in Figure 2, choosers thus mediate between environment and grammar as shown in Figure 6.

The precedence relation between NURSING-TIME and STORY-TIME will be expressed by the choice of secondary past and the precedence relation between STORY-TIME and NOW will be expressed by past from PRIMARY TENSE. To generate the tense expression *had been*, we will have to make the following choices. Every finite clause has a primary tense; the task is here to specify the type of primary tense we need. We choose feature past, since STORY-TIME precedes NOW. In the system SECONDARY TENSE, we choose feature secondary, because NURSING-TIME and STORY-TIME are discovered to be different times, i.e., because we want to remove NURSING-TIME one step further from NOW than the minimal tense expression *was* (as in *who was a nurse*) indicates. The next system, SECONDARY TENSE TYPE, lets us specify the direction of this step. We choose feature past to

[7] The table reads as follows. Vertically, from the top, the choices of PRIMARY TENSE are represented. On the left hand side, first the features of SECONDARY TENSE, no secondary and secondary, are represented, then the three features of SECONDARY TENSE TYPE. As the bottom line indicates, the table is valid when there is no tertiary tense. The table would have to be expanded considerably for the selection of tertiary.

SECONDARY \ PRIMARY		past	present	future
no secondary		was	is	will be
sec.	past	had been	has been	will have been
	pres	was being	is being	will be being
	fut	was going to be	is going to be	will be going to be
		no tertiary		
		TERTIARY		

Figure 5: Tense combinations defined by tense grammar

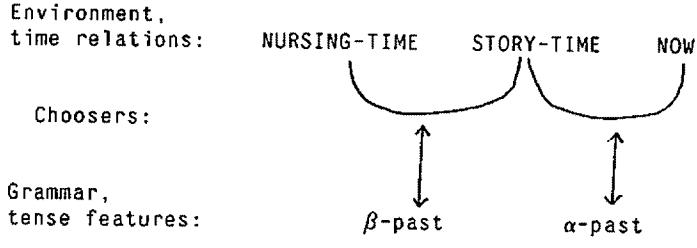

Figure 6: The boundary between environment and grammar

express that NURSING-TIME precedes STORY-TIME.[8] The grammar will re-express this feature for us in structural terms as the tense auxiliary *have*. With the selection of a secondary past tense, we have completed the tense chain. When we check to see if a higher order of tense is needed (looping back to SECONDARY TENSE) we use the same strategy as in the first traversal of SECONDARY TENSE and find that is is not needed.[9]

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[8]It is important that the grammar and choosers distinguish between the decision to have an additional tense (take a further temporal step) and the decision about the type of tense (the direction of the step). For instance, secondary tense can be used for a flash forward instead of a flashback, as in the example from the Lessing story: *As Bishop Angelo Roncalli, who would become Pope John XXIII, once said, he sought contacts "with people from both sides of the river"* ... (LA Times).

[9]When the conceptual temporal relations are more complex, the tense expression is also more complex. For example we can get *Jane will have been going to be a nurse in couple of weeks for ten years next Friday*, although need for such complex tense expressions is fairly rare; see [Halliday 76].

The reasoning we have just been through was informal. However, it is precisely this type of reasoning that the choosers for these systems must be capable of and this is the task we face.

4 INTERACTION BETWEEN CHOOSERS AND ENVIRONMENT: INQUIRIES

We can use dialogue as a metaphor for the interaction between choosers and the environment. The interaction between the two can thus be presented as an inter-stratal dialogue (cf. Figure 2 above). (We can present the interaction between a chooser and its system in the same way.) When the chooser process starts, the first tense chooser does not have any information from the environment. But in order to make a choice, it must obtain the relevant information. It must determine whether the conditions under which a grammatical feature like past is selected obtain, i.e., whether the choice conditions have been met. This is achieved by **inquiries**. An inquiry is one of the steps that constitute the chooser process. It is a request for information from the environment. Inquiries are the only mechanisms that choosers use to interact with the environment.

The inquiries from a chooser and the responses from the environment are the turns in the dialogue between these two components of a text generation system. As a set-up for the tense choosers, we need to establish what the time of speaking is since this is crucial to tense. It enters into temporal relations with other times and these relations constitute choice conditions. This happens in the following little conversation:[10]

> **Chooser:** What concept represents the current time, the time at which the language is generated?
>
> **Environment:** It's called NOW.
>
> **Chooser:** I'll put the association of NOW with T_0 in the function association table.

First, the chooser uses an inquiry that is intended to **identify** the time of speaking.[11] An identifying inquiry asks for a concept of a particular kind. The response is the concept that fits the description for the particular clause being generated. Identifying inquiries are thus open set inquiries.[12]

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[10]The systems in Figure 3 represent the grammar of tense. However, before we reach one of these systems that encodes an option in tense, there are some inquiries which always have to be asked (no matter what tense combination is chosen) and that may be relevant not only to tense determination but also to the selection of a time adverbial. Consequently, these questions are asked early on in the generation of a clause; the information will be available to later choosers both for tense and for adverbials.

[11]Here this inquiry is represented by an informal question in English. It has turned out to be highly useful, in fact crucial to the work, to have an informal question like this in addition to the formal version of the inquiry. In presenting the chooser framework, the informal English questions are also quite helpful and I will continue to use them here.

[12]There are two kinds of inquiries, identifying ones and branching ones, the second of which we will meet shortly.

Next, the environment responds. The way it arrives at the response will of course vary with the particular design of the environment. What is important is only that the environment does give an appropriate response. Here the response is in the form of a symbol for a hub, NOW.

A **hub** is a conceptual locus in the environment. As a concept it participates in a number of relations and information about what category it belongs to, about its subtypes and instances and so forth can be derived. The conceptual locus is like the hub of a wheel (hence the term) in that it is at the centre of relations like these through which additional pieces of information can be accessed.

Thirdly, the chooser associates the response from the environment with a grammatical symbol; the hub NOW is associated with the variable T_0.[13] The conceptual information has thus been indexed in the grammar and is now available through T_0. The table in Figure 7, the so-called function association table, shows the association of T_0 and NOW (at the top) and the other function-to-hub associations that will be established in the course of our example.

TIME-HUB	TENSE-FUNCTION
NOW	T_0
STORY-TIME	T_1
NURSING-TIME	T_2
NURSING-TIME	T_{PROC}

Figure 7: Function Association Table

The name of the present inquiry is SpeakingTimeID; we can represent the inquiry succinctly as (SpeakingTimeID PROCESS). The inquiry is applied to the grammatical function PROCESS, since information about the speaking time is available through the hub that is associated with this function.

The procedure for establishing a hub for the time of the encoded by the clause,

[13] An important aspect of most recent systemic grammars is that grammatical structure is stated in terms of grammatical functions and not in terms of grammatical categories (classes) like noun phrase and noun. Any single constituent may serve more than one grammatical function; each of these functions can have a hub-association. For mnemonic reasons, it is convenient to use T_0, T_1, etc. as names for the variables with which particular time concept values are associated. Instead of these, I could have used grammatical the grammatical functions that carry the realizations of the tense selections. For instance, the time of speaking for any clause would be associated with the function FINITE. We need a number of functions $TEMPO_0$, $TEMPO_1$ etc. in any case for the information about temporal auxiliaries and tense morphemes.

represented by T_{PROC}[14] is quite parallel; a chooser inquiry, an environment response, and an association of the hub symbol NURSING-TIME that constitutes the response with the grammatical function symbol T_{PROC}.

This chooser work concludes the set-up for the tense choosers.

5 PRIMARY TENSE CHOOSER

Before going through the primary tense selection for *who had been a nurse*, I will present the chooser.

5.1 Organization of chooser

The whole chooser is represented diagrammatically in Figure 8.

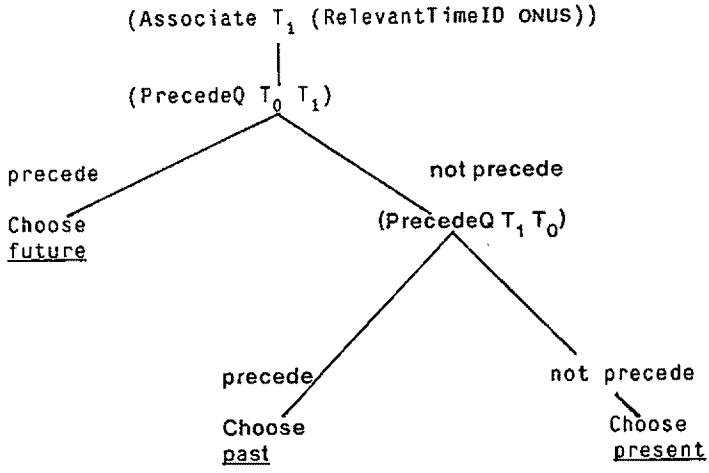

Figure 8: The chooser of primary tense

The first inquiry, RelevantTimeID, is quite parallel to the two we have met so far, SpeakingTimeID and EventTimeID, and is of the identifying kind and associates a hub, which comes from an open set of responses, with a grammatical function: (Associate (RelevantTimeID PROCESS) T_1) In our example, STORY-TIME is identified by the inquiry and then associated with T_1.

The second inquiry is of a new kind; it is a **branching** inquiry, PrecedeQ. A branching inquiry defines a closed set of possible responses, usually two. These responses constitute choice conditions. For instance, the response T_0 *precedes* T_1 is the

[14] The time of the PROCESS of the clause. T_{PROC}, is called *event time* by e.g. [Reichenbach 47]. Just as in systemic grammar in general, the term *process* is intended to be neutral between events (dynamic) and states (stative).

condition under which the feature future is chosen. As can be seen from the chooser of primary tense, more than one response (condition) may be needed to determine the selection of a feature. In the chooser, two conditions have to be met in order for present to be chosen: *T_0 does not precede T_1 & T_1 does not precede T_0*. This is an example of a conjunction of choice conditions. As we will see below, choice conditions may also be disjunctive: There is diversification between choosers and systems.

Grammatical options are stated in a **factored step by step** way and the chooser semantics reflects this decomposition, since there is a chooser for each grammatically recognized option.

As the diagram shows, branching inquiries have closed set answers, represented by *precede* and *not precede* for PrecedeQ. They give choosers the structure of **decision trees**, with a branch for each response.

5.2 The chooser in action

Now, let's traverse the chooser of primary tense for our example *who had been a nurse*. First, the time that is related to the time of speaking, T_0, is identified. As before, we can present the generation of our example as a dialogue between the environment and Nigel's choosers, using the informal English rendering of the inquiries:

> **Chooser:** What concept represents the time to which (ONUS) is relevant? (I.e., (ReleventTimeID ONUS))
>
> **Environment:** It's called STORY-TIME.
>
> **Chooser:** I'll put the association of STORY-TIME with T_1 in the function association table. (I.e., (Associate STORY-TIME T_1))

Next, we determine what relation obtains between the two times T_0 and T_1.

> **Chooser:** Does the moment or interval of time NOW (T_0) strictly precede the moment of interval STORY-TIME (T_1)?
>
> **Environment:** No, it does not.
>
> **Chooser:** Does the moment or interval of time STORY-TIME (T_1) strictly precede the moment or interval NOW (T_0)?
>
> **Environment:** Yes, it precedes it.
>
> **Chooser:** Then I choose feature past.

The choice of the feature past eliminates primary future and present in the table in Figure 5.

5.3 Additional chooser structure

Before we proceed to SECONDARY TENSE, let me indicate some further structure of the chooser of primary tense not yet presented. The feature past is chosen because there is a precedence relation: STORY-TIME precedes T_0 and we get *had* rather than *has* (which is present) or *will have* (which is future). However, some other branching inquiries come before the one about precedence. This is so because there may be other reasons for choosing the feature past; see the chooser fragment in Figure 9 which adds CounterfactualityQ above the first questions about precedence in the primary tense chooser.

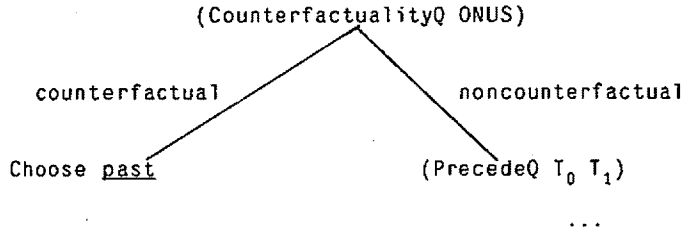

Figure 9: Addition to PRIMARY TENSE chooser

past may also be selected to convey counterfactuality, as in *I wish Henry* spent *less time looking for a wife* and *If Henry and Anne* were *here, I* would *know*. So before inquiring about precedence relations between T_0 and T_1, the chooser presents an inquiry about the counterfactuality of the proposition to be expressed. If it is counterfactual, past is selected. Otherwise, the chooser presents the normal inquiries about precedence.[15]

6 SECONDARY TENSE CHOOSER

The second tense system we reach is SECONDARY TENSE; see Figure 3 above.[16] This system controls the option of having at least one tense auxiliary (the secondary option, with *have*, *be* or *be going to*) or none (the no secondary option).

The chooser of SECONDARY TENSE is diagrammed in Figure 10. The path we will take appears in boldface.

---

[15]This discussion brings out a general property of choosers. Choosers are not restricted to having only one occurrence of the choice of a grammatical feature like past. Rather, a feature can be chosen under as many different circumstances as seem appropriate. In other words, the chooser approach does not commit us to the position that there is only one meaning for each linguistic form or even for each systemic option.

[16]Here I will not go into exactly how and when a system is reached. Suffice it to say that each system has an input or entry condition consisting of a single grammatical feature, a disjunction of features or a conjunction, as can be seen in the diagram of the tense grammar above. In general, any one of the systems whose entry condition has been satisfied may be entered next in the generation process. The control of system entry is a grammatical matter; choosers do not have entry conditions, nor do they control the entry of their systems.

The first inquiry is SameAsQ, a **branching** inquiry. Two times, T_1 and T_{PROC} are compared for identity. If they are the same, represented by "same" in the diagram, there is no time ordering to express in the clause in addition to the one that is always expressed in tensed clauses in English (PRIMARY TENSE; see above). Hence, the action taken by the chooser if the response is "same" is to choose the feature no secondary, giving us for example *who was a nurse*.

However, if the two times are not the same ("different" in the chooser diagram), there is an ordering of T_1 with respect to T_{PROC} to be expressed, and the feature secondary is chosen. The realization (expression) of this feature in the grammar is the addition to the grammatical structure being built of a tense auxiliary to express the ordering of the two times. The auxiliary is *have*, *be*, or *be going to*. The present system does not introduce any selectivity among these three options. That is left to the next system, SECONDARY TENSE TYPE. As already noted, this factoring of the statement of options is a general feature of Nigel.

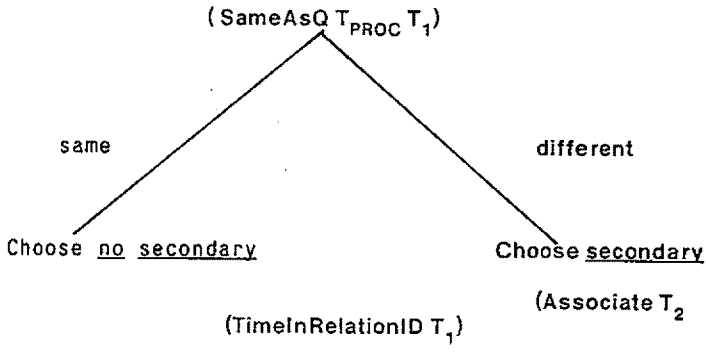

Figure 10: SECONDARY TENSE chooser

If the two times are different, the SECONDARY TENSE chooser chooses secondary, but in addition it asks a further non-branching question. This identifying inquiry, TimeInRelationID, identifies the time in relation to which T_1 is to be ordered.[17] The hub symbol that constitutes the response is assigned to the grammatical function T_2.

Chooser: Is STORY-TIME (T_1) identical to NURSING-TIME (T_{PROC})? (I.e., (SameAsQ T_1 T_{PROC}))

Environment: No, they are different.

Chooser: Then I choose secondary.

---

[17] This time may be T_{PROC} and is indeed this time in our example. However, in more temporally complex examples, there may be an additional reference time that is different from T_1, as in *Jane had been going to be a nurse*. For this reason, the SECONDARY TENSE chooser always asks for a symbol for this time and associates it with T_2. As we will see, the TERTIARY TENSE chooser will check whether this is the same as T_{PROC} or not.

Then, the chooser determines that STORY-TIME (T_1) is to be related to NURSING-TIME and this time concept is associated with T_2.

To get a feeling for what progress we have made, look at the table in Figure 5 above: The choice of secondary has decreased the number of tense competitors; the column labeled no secondary has been excluded.

Once it has been established that there is a "secondary tense", the next step is to determine the type of tense to be expressed, i.e., to determine whether we have a future tense, a present tense, or a past tense. This is the task of SECONDARY TENSE TYPE (immediately to the right of SECONDARY TENSE in the diagram in Figure 3) and its chooser. Using our spatial metaphor, we can say that we have decided to take a step in time; now we have to decide on the direction of the step.

7 SECONDARY TENSE TYPE CHOOSER

The chooser of the SECONDARY TENSE TYPE system is represented by the diagram in Figure 11. The first chooser action is an inquiry of the branching type. Notice that the two parameters of the inquiry -- T_1 and T_2 -- have already been assigned hubs by earlier systems. There is thus a flow of hubs from one system to another.[18]

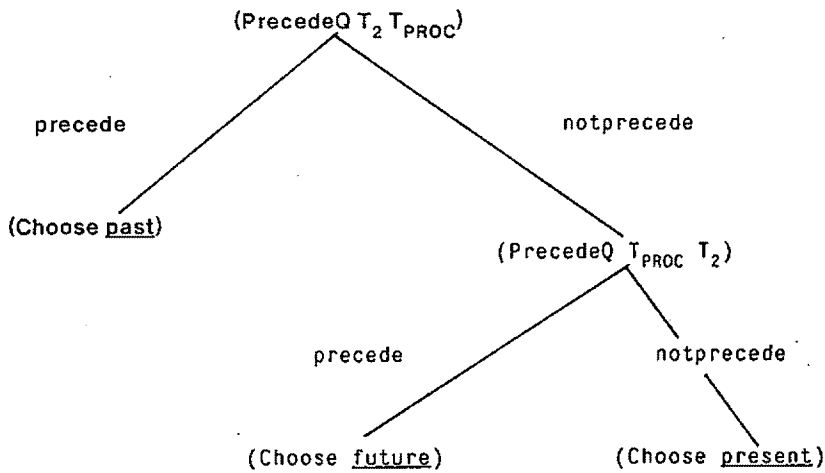

Figure 11: SECONDARY TENSE TYPE chooser

When the answer to (PrecedeQ T_2 T_1) is "precede", past (realized by *have*) is chosen. When the answer is "notprecede", an additional branching question is asked. The result for the structure of the chooser is that it has the form of a decision tree with two branching nodes.

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[18] If the two functions T_1 and T_2 had not been given hubs, the inquiry (PrecedeQ T_1 T_2) would have been meaningless at this point. In general, it is overall dependency in the network of the grammar of one system upon the features of other systems that ensures that the choosers of different systems create hubs in such a way that they feed other chooser questions and maintain an uninterrupted flow of hubs.

The second inquiry is also PrecedeQ, but the order of the parameters has been changed: (PrecedeQ T_1 T_2). When the answer is "precede", the feature future (realized by *be going to*) is chosen. This is really the only reasonable outcome, since the inquiry is embedded under the answer "notprecede".[19] With the present design, both choices, past and future, are the result of positive answers. If T_1 neither precedes nor follows T_2, present is chosen.[20]

In our example we want to express a time relation where the time of the "nursing event" precedes the story time, which corresponds to the hub for T_2. So the following dialogue ensues:

Chooser: Does NURSING-TIME (T_2) precede STORY-TIME (T_1)?

Environment: Yes, it does.

Chooser: Then I choose past.

With the choice of past, we can again eliminate a section of the table in Figure 5. We have excluded the future column.

8 TERTIARY TENSE CHOOSER

The next system we reach is TERTIARY TENSE. Its chooser is quite parallel to that of SECONDARY TENSE.[21] The purpose is to find out whether there is a need to express an additional time relation or not. Through the choice of secondary in the SECONDARY TENSE system, we have already expressed the pastness of the time of Jane's being a nurse with respect to the general time of the story. Consequently, there is no need to establish any further time relations:

Chooser: Is NURSING-TIME (T_2) identical to NURSING-TIME (T_{PROC})?

Environment: Yes, it is.

Chooser: Then I choose no tertiary.

The choice of no tertiary eliminates all of the boxes that could have been included in the table in Figure 5.[22]

---

[19] Precedence is here strict precedence.

[20] In other words, the so-called progressive is chosen for a tense reason (a relation between two times), rather than for an aspectual reason. Actually, it is probably necessary to add a further inquiry at this point in the chooser. There are fairly good reasons for asking whether T_2 includes T_1, and choosing present if the answer is positive. The inclusion interpretation of the so-called progressive has a long tradition -- Sweet, Jespersen, etc. -- and has recently been argued and studied by e.g. [Schachter 81] and [Merril 82]. I will not pursue the issue here.

[21] This is what is to be expected, given Halliday's analysis of tense as linearly recursive: cf. section 3.1 above.

[22] This feature is used to represent the second time the feature no secondary in the SECONDARY TENSE schema is instantiated.

The choice of the feature no tertiary concludes the tense reasoning for our example. An independent set of processes work on the features chosen and re-express them as linguistic structure, yielding *had been*.

9 CONCLUSION

The table in Figure 12 shows how the problem of selecting an appropriate tense combination to express conceptual time relations has been decomposed by systemic grammar.

PRIMARY / SECONDARY		past	present	future
no secondary		was	is	will be
sec.	past	had been	has been	will have been
	pres	was being	is being	will be being
	fut	was going to be	is going to be	will be going to be
		no tertiary		
		TERTIARY		

Figure 12: The steps in choosing tense for *had been*

This decomposition into minimal choice points, represented by systems, has made it possible for us to formulate simple tense choosers that selected the right tense combination for our example step by step and together achieved the right result.

The area of tense has served to introduce the chooser framework and point to some of its important properties like the decomposition of the decision process and the flow of hubs from one independent chooser to another.

The general question about how to make grammatical choices was mapped onto a more specific version of of it about tense. However, choosers are not restricted to areas similar to tense. Experience clearly shows that the chooser approach is quite general across different areas of grammar. This leads us to believe that the chooser framework goes quite some way towards solving the problem that our initial question "How are grammatical choices made as part text generation?" raises. An important task is now to increase our understanding of English semantics by extending detailed coverage to diverse areas of English grammar.

	secondary			no secondary
	past	present	future	
past	had had built	was having built	was going to have built	built
	has had built	is having built	is going to build	
	will have had built	will be having built	will be going to have built	
present	had been building	was being building	was going to be building	build
	has been building	is being building	is going to be building	
	will have been building	will be being building	will be going to be building	
future	had been going to build	was going to build	was going to be going to build	will build
	has been going to build	is being going to build	is going to be going to build	
	will have been going to build	will be being going to build	will be going to be going to build	
	had built	was building	was going to build	
	has built	is building	is going to build	
	will have built	will be building	will be going to build	

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V

SEMANTICS

THE VERB SLAP

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The verb slap is used to indicate physical contact: slap the bottle. It can also indicate movement either before or after the contact: slap at the bottle and slap the bottle off the table, respectively. In these uses it parallels the verb kick: kick the box, kick at the box, and kick the box out of the way. In two earlier articles on the verb kick (Ruhl 1982,1983), I have claimed that kick has three major uses:

(A) Movement: I kicked (my foot) (up) (at the box).
(B) Contact: I kicked the box (on the top).
(C) Movement: I kicked the box out of the way.

I have argued that kick is a MOVEMENT verb, an movement of the foot; its basic pattern is (A). To account for (B) and (C), I note the metonymic relationship of kick's three uses, in (D):

(D) Movement (A) > Contact (B) > Movement (C)

This says simply that a movement can lead to a contact, which can lead to further movement.

Solely on the evidence of (A-C), kick seems to be a polysemic verb. However, as an alternative solution, we can say that metonymic relationships such as (D) allow words to occur in contexts not fully appropriate for their meaning; a context plus a metonymic relationship can "augment" the meaning of the verb. To rephrase: given that movement can lead to contact, if a verb which signifies only movement occurs in a context appropriate for a contact verb, then the full phrase will convey the sense of contact even if the verb does not. Conversely, a contact verb such as hit can appear in contexts appropriate for movement: before contact in hit at the ball, after contact in hit the ball to the fence. kick and hit contrast in (E), with derived senses in brackets:

(E) kick:	Movement	>	[Contact]	>	[Movement]
hit:	[Movement]	>	Contact	>	[Movement]

Kick and slap seem intuitively to be members of the same class, fellow hyponyms of the same superordinate. They appear to require parallel specific instruments: feet for kick, hands for slap. However, in this paper I want to show that, contrary to intuition and the impression given by my cited phrases, slap is a member of a different class, a CONTACT verb like hit.

Tables (F-H) for slap parallel (A-C) for kick; X=Agent, Y=Instrument, Z=Goal (the affected object), and p=Preposition. In (F), Contact, I list six basic patterns. Example sentences (see end of paper) are listed in two columns, reflecting two ranges of instruments. If slap parallels kick in this regard, the "literal" instrument would be a hand or palm, as in the examples of the first column (1-30); in (e-f) 'hand' as instrument is understood. Most dictionaries, however, recognize a wider range of instruments: 'flat object'; these are exemplified in the second column (16-30).

(F)	CONTACT		
	'Instrument':	'hand'	'flat'
	a. Y slaps Z	(1)	(16-21)
	b. Y slaps Z p-Z	(2)	(22)
	c. X slaps Z with-Y	(3-7)	(23-26)
	d. X slaps Z p-Z with-Y	(8-9)	(27-28)
	e. X slaps Z (with-Y)	(10-12)	(29-30)
	f. X slaps Z p-Z (with-Y)	(13-15)	
(G)	MOVEMENT BEFORE CONTACT		
	a. Y slaps p-Z	(31-35)	
	b. X slaps p-Z with-Y	(36-39)	
	c. X slaps p-Z (with-Y)	(40-44)	
	d. X slaps Y p-Z	(45-67)	
(H)	MOVEMENT AFTER CONTACT		
	X slaps Z R	(77-87)	

Patterns (a-b) of (F), exemplified in (1-2), have the instrument as subject; in (b), an added prepositional phrase indicates specific location on the goal (p-Z). Patterns (c-f) have the agent as subject; (d,f) have locative phrases. An instrumental adjunct is present in (c-d), implied in (e-f). Although commonly expressed with with, adjunct instruments have variant expressions. In (6) the preposition is omitted, in (7) it is more elaborated, and in (10-11) it is in an external phrase. Example (12) mentions the instrument by describing its action.

Sentences (16-30) exemplify the wider range of instruments. Heels (16), slippers (17), feet (18), rope (19), towel (24), ruler (25), whip (26), check lines (27), and envelope (28) are all conceivable as flat objects. In (23) a fish as agent uses parts of its body as instruments. 'Bat' is assumed in (29) and a paddle

is mentioned externally in (30). More dubious as literal instruments are waves (20), wind (21), and snow (22), although (65) describes rain as "sheets," which suggests that these elements are so conceived when they occur with slap. I see no reason to limit literal slapping just to hands and palms, except on the basis of a false analogy to kick. These and the instruments of later examples show clearly, to me, that slap has a more general meaning than kick.

In (G), Movement Before Contact, I conflate the two groups of instruments. Pattern (a) has the instrument as subject. Patterns (b-d) have the agent as subject; the instrument is in an adjunct in (b), implied in (c), and the direct object in (d). In examples (68-76) (not shown in (G)), the intransitive prepositions up and down also occur.

In (H), Movement After Contact, all my examples have an agent as subject, although the instrument is possible too (A hand slapped the book across the room); R=Result, with the sense of 'movement' (78) or 'new state' (84), either AP (83) or PP, the latter transitive (77) or intransitive (80).

The parallel patterns of (A-C) and (F-H) suggest that kick and slap are fellow hyponyms, but there is one significant difference in the (A,F) patterns, the Movement before Contact. Kick can occur with only an instrument direct object; slap requires an additional adjunct. That is, I kicked my foot is ambiguous, one sense being 'I moved my foot'; I slapped my hand cannot have the sense 'I moved my hand'. Kick can also be intransitive: I kicked. When slap is intransitive, as in (88), it is pseudo-intransitive, with an implied direct object goal. I kicked, conversely, cannot have such an implied goal. In these respects, slap is like hit: we can get hit my hand on the table, but no hit my hand in the sense 'move my hand'. Additionally in (F), slap's adjuncts usually indicate final contact; it is harder to get parallels to the kick out of (A).

There is one significant sub-pattern of intransitives with slap which bears notice (89-92). Here slap does seem to have a purely movement sense, with perhaps a suggestion of a distinctive slapping sound. Implied objects can be imagined, but I would rather suggest that this is a special syntactic outgrowth for slap, similar to such things as These items sell easily.

Examples (93-96) present interesting combinations: in (93) slap palms together can be either contact or movment pattern; (94) coordinates and (95-96) parallel contact and movement patterns. If slap is assumed to be polysemic, (94) would have to be an example of zeugma. If, on the other hand, variation of sense is due to

syntax and metonymic inference, then such "mixed" patterns are to be expected.

With slap being a more general verb than kick, its metaphoric range is correspondingly more limited. I have only two examples of metaphor (97-98), the first with the sense 'movement like a slap', the second with 'effect like a slap'. Metonymy too is less rampant than with kick. In examples (99-116), slap is literal, but the important point of the message is the purpose for it. As I have noted with kick, when an act clearly reveals a purpose, the act can be used to stand for the purpose even when the act does not occur. Sentences (117-25) are examples of metonymic slap, playing on the implied effect of a slap on the (human) goal. The instruments -- reprimand (119), damage suit (120), taxes (121), quota restriction (122), fine (123), summons -- (125) are what make these examples clearly figurative. Figurative syntax parallels literal: (117-118) are pattern (H), (119-23) pattern (G), and (124-25) pattern (F).

In the three articles on kick and slap, I have argued that these two verbs are monosemic. I claim that in the usual polysemic analyses of these and other verbs, two mistakes are characteristic: (1) not clearly distinguishing between meaning inherent to a verb and meaning inferrable from its context; and (2) not noting the systematic parallels of literal and figurative uses of a word and thus failing to see how these can be integrated in a single meaning. I hope these three articles have served as guides for how to avoid these mistakes, if mistakes they be. And there will be more guides to come.

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DICTIONARY ABBREVIATIONS

W3 Webster's Third International Dictionary
WBED World Book Encyclopedia Dictionary
OALD Oxford Advanced Learner's Dictionary

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1. His hand whips out and slaps the side of my head. (Terry Davis)
2. A heavy hand slapped him on the back. (John Dos Passos)
3. Once she slapped a fly with her bare hand. (Walker Percy)
4. The old woman slapped their little haunches with her open palm. (Katherine Anne Porter)
5. ...Angelo slapped Fidelman's face first with one fat hand, then with another. (Bernard Malamud)
6. I began to hit him then, slapped his face forehand and back... (Kelly Cherry)
7. ...to slap it [=shell] back and forth with its [=cat] paw. (Shirley Ann Grau)
8. ...Drago slapped her viciously across the face with his open right hand. (Steven C. Lawrence)
9. The sheriff slapped her straight across her face with his open palm. (Richard Wright)
10. ...he drew back his hand and slapped Howard's face... (Paul Olsen)
11. Using the flat of his palm, he tried slapping the beef... (Alan Dean Foster)
12. ...[he] slapped him in two motions, palm and back, of the same hand... (William Faulkner)
13. Croft slapped Martinez on the shoulder. (Norman Mailer)
14. ...the guard slapped him across the face... (Craig Thomas)
15. "Sometimes I wanted to slap her in the face..." (Stephen Schmidt)
16. ...his heels slapping the stone... (Henry Bromell)
17. She walked away from him, down the chapel, her slippers slowly slapping the stone floor. (Barbara Rieff)
18. He walked on, and heard her bare feet slapping the path behind him. (Ellery Queen)
19. The rope slapped my ear... (T. E. Porter)
20. He listened to the waves slapping the bow... (Smith Kirkpatrick)
21. ...the wind slapped the sea so smartly... (Kay Boyle)
22. The snow slapped him in the face... (Cecilia Holland)
23. ...[a fish] slapping the sand with its tail, flanks, belly, and head... (Edward Bonetti)

24. "...Cousin Ella was slapping my face with a wet towel." (Dorothy Canfield)
25. Every day the nuns slapped them with rulers. (Rose Rosenblatt)
26. She slapped the stallion with her whip... (Abode James)
27. He slaps the mules on the rump with the leather check lines. (Jesse Stuart)
28. ...she slapped me across the chest with the envelope. (James Crumley)
29. A pinch hitter slapped the ball. (Vic Wall, W3)
30. I slapped the water, angling my paddle, sending a shower in her direction. (Donald L. Gold)
31. Then he ran back down the beach, his canvas sneakers slapping against the hard-packed sand. (Ellery Queen)
32. [skipping rope:] ...the rope slapping against dirty-fresh girl flesh... (Robert Hazel)
33. Above him the bullets hissed, slapped into the trees, hummed through the air as they ricocheted. (Cross of Iron)
34. ...the grass slapping at his knees... (L. Woiwode)
35. Rain slapped at the stained-glass window. (Berton Roueche)
36. Fencer began to slap at him blindly with his free arm. (Robert Stone)
37. He slapped with the palm of his hand on the table. (W3)
38. ...[she] removed a clean handkerchief from her cuff and began to slap at her eyes with it. (Flannery O'Connor)
39. Sebastian yelled, spun around, slapped at her with the spade. (Hal Borland)
40. He slapped at his right thigh... (Larry Niven)
41. Here their mother again slapped at the air... (Catherine Cookson)
42. ...the cat slapped at his hand. (Cecilia Holland)
43. ...the full-leafed branches slapping at us as we went by... (Donald Honig)
44. The water slaps at the dock and the moored boats. (Gordon Weaver)
45. Uncle Floyd slapped his hand on the trailer. (Wright Morris)
46. Casement slapped a palm on the desk. (John Jakes)
47. She slapped her right hand into her forehead... (Charles Baxter)
48. ...slapping the back of an open palm into his other hand... (Noel Hynd)
49. He drew in his mouth reflectively and slapped a hand to his knee. (Martin J. Hamer)
50. He slapped one hand against his neck. (Jean Toomer)

51. The boy slapped his palm against his leg... (Jack Matthews)
52. ...the click of metal as travelers' coins are slapped upon the thick table... (Agnes Sligh Turnbull)
53. ...she slapped the knife into Bob's palm. (Frank G. Slaughter)
54. He slaps his cup against the saucer. (Norman Mailer)
55. ...he stood slapping his soaked hat against his thigh... (Ken Kesey)
56. She got out a knife and began to slap peanut butter and jelly on slices of bread. (Doris Miles Disney)
57. ...she idly slaps the shortened length of rope on her thigh. (Wright Morris)
58. "Oh, brother," says the cop, slapping his nightstick in his palm. (Steve Katz)
59. ...I slapped the covers over my face. (Corinne Demas Bliss)
60. ...[he] slapped the quilt over her buttocks. (L. Woiwode)
61. ...carved a...bun into three horizontal slices, slapped two beef patties between them. (Time, W3)
62. The angrier he got, the slower and harder he slapped his paint brush across the walls... (Terri Schultz)
63. ...a beaver slapped his tail on the water. (Sally Wood)
64. ...[waves] would greedily slap their tops over the gunwale. (Dudley Cammet Lunt)
65. The rain came now in sheets so dense that the wind slapped them against the building... (Barry Targan)
66. A ricochet slapped some more dirt on top of them. (Norman Mailer)
67. The clerk slapped on a stamp and tossed the letter into the canvas wheeler... (George Cuomo)
68. His voice is clear and strong slapping up against the cement and steel. (Ken Kesey)
69. ...her arms came slapping down to her sides. (Philip Roth)
70. ...[he] slapped both hands down on his knees. (Ken Kesey)
71. ...she slapped one hand desperately down into the other on her lap. (Mark Schorer)
72. ...she slapped the letter down on the table. (Sally Benson)
73. ...I slap the case of beer down on the couch... (Hugh Allyn Hunt)
74. Alice slapped the paper down on the grass... (Peter de Vries)
75. And he took out his solitaire deck, shuffled the cards loudly, slapped them down. (Tillie Olsen)

76. At his hotel an irritable clerk slapped down a key... (Agatha Young)
77. ...slapping the ball over the makeshift net... (Austin Clarke)
78. Graber extended the magazine he had been reading to arm's length and slapped it violently to the floor. (John Mayo Goss)
79. ...she saw the lady slap a slice of coconut out of the hand of her illustrious son. (Francis Gray Patton)
80. Angry, I slapped her hand away. (V. C. Andrews)
81. She stood up and slapped powder from the sofa cushions. (T. Gertler)
82. "I'll slap that stupid smirk right off your face myself!" (Thalia Selz)
83. ...I put the bottle back in the drawer and slapped it shut. (Ken Kesey)
84. ...they had covered his burns with grease and slapped him almost sober... (Cecilia Holland)
85. I was slapped awake as if I were new-born... (Mary Lee Settle)
86. He slapped it [=newspaper] open on the table. (Henry Roth)
87. Underhanded, he chucked it onto the fire and slapped clean his palms. (Michael Rothschild)
88. The mosquitoes were back again. Walt slapped and reached for his cigarettes... (Madison Jones)
89. As the screendoor slapped behind her... (Tom Wicker)
90. ...the book slaps shut with a loud pop. (Patrick F. McManus)
91. Clothes slapped warm and dry with wind and sun. (Janet Frame, W3)
92. The piston was slapping in the cylinder. (W3)
93. Whiteside slapped his palms together for emphasis. (Noel Hynd)
94. Hands slapped his sides and up his legs. (Bruce Palmer)
95. Before him the windshield wipers slapped back and forth quietly, slapping the melting snow to streams trailing to the sides. (Theodore Weesner)
96. ...now she was pushing and slapping at the young man who slapped her right back. (Joyce Carole Oates)
97. I slapped the barrels [of the gun] on him [=woodcock] and pulled. (H. G. Tapply)
98. "Your wife?" bellowed Dad, his astonishment so clear it slapped me too. (V. C. Andrews)
99. to slap a child for disobedience. (WBED)
100. I don't like being slapped on the back as a greeting. (OALD)
101. ...he slapped the deck down for Prew to cut. (James Jones)

102. Holden slaps his pocket for a match. (Walker Percy)
103. I slapped my hand over the receiver to hide my laughter. (Joyce Carol Oates)
104. ...sometimes he slapped his left chest with the flat of one hand as if to awaken his heart. (Doris Betts)
105. ...he felt like slapping her to bring her back to earth. (Simone deBeavoir: tr., Leonard M. Friedman)
106. Bill slapped down his badge on the first of January and made room for Roger Straws. (Jerome Charyn)
107. "Let's make sure," the policeman said, and he began to slap Francis' clothes, looking for what -- pistols, knives, an icepick? (John Cheever)
108. This same baby girl would not miss her, she whose hand she had slapped more than once. (Margaret Gibson)
109. He races out of the door of the elevator. Slaps the elevator button. (Joe McGinniss)
110. "You lying little devil!" I said, itching to slap her defiant face. (V. C. Andrews)
111. I scowled, then slapped Jory's hand when he reached to take my slice of pie. (V. C. Andrews)
112. Mosquitoes whined around. One bit his cheek. He slapped it fiercely. (Madison Jones)
113. He slapped himself several times on the belly happily as a baby. (John Dos Passos)
114. ...the child, slapped and crying into life... (Arthur A. Cohen)
115. ...[he] said nothing and his hand did not acknowledge mine. I would rather he had slapped me. (Cynthia Marshall Rich)
116. ...she had been able to control W. O. in his cups, slapping sense into him. (Andrew Turnbull)
117. He had just been slapped down badly in a committee hearing, by a consumate pragmatist. (Willie Morris)
118. ...found himself divorced and slapped in jail for nonsupport. (James Crumley)
119. "...I said come back or I'll slap a reprimand on you..." (Jay Neugeboren)
120. What sent its mayor to the boiling point was a damage suit Adam slapped on him... (Tom Wicker)
121. slapping new taxes on farm collectives. (G. E. Cruikwall, W3)
122. slap a quota restriction on foreign imports of fur. (New Republic, W3)
123. slap an additional fine on the violator. (J. M. Flagler, W3)
124. slap certain academic critics. (Dudley Fitts, W3)
125. slap him with a summons. (W3)

LEXICAL GAPS AND LEXICALIZATION: A DIACHRONIC ANALYSIS

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In the field of linguistics, specific types of assertion tend to proliferate, frequently at the expense of the credibility of the discipline itself. We continue to teach our students, especially undergraduates, truisms that aren't true, generalizations that don't generalize, and explanations that fail, even to casual observers, to explain. (Our texts are also full of examples of utterances that will never be uttered, sentences analyzed as non-sentences, and non-sentences presented as sentences, but a fuller discussion of such short-comings must wait on someone more willing to undertake it.) The irony is that most of us know better. Yet, we continue to tell our students that new words enter vocabularies when a society has a new concept that requires expression, and we cite as examples astronaut, automobile, and smog. We teach them that pronominal systems are "closed" areas of the vocabulary and resistant to change, when the next week we will be telling them about changes in the English pronominal system: loss of the dual pronouns, loss of the personal/impersonal distinction in the second person, and borrowing from Scandinavian.

What I am pointing to here is a curious willingness to entertain contradictions for the sake of ease in presentation. (I can think of no other explanation for this behavior.) A similar tendency appears in our ways of handling relationships between a language and its society of speakers. When it is convenient for us, we easily invoke "social change" as an explanatory strategy for lexical and semantic changes. We are equally quick, however, to dismiss social influences on a language when it suits our purposes. (Hardly anyone reputable believes that the reverse is plausible, i. e., that changes in a language effect, or perhaps accompany, changes in a society, but I do.) Take, for example, the Saussurean dichotomy between diachronic and synchronic analysis, one of the more notable "sacred cows" in linguistics. While I wouldn't think of disputing its viability, our use of that distinction is noticeably inconsistent. It is usually understood as a necessary distinction insofar as synchronic analysis

of a language precedes diachronic analysis; without synchronic analysis of a language, it would be difficult to undertake diachronic analysis. But our acceptance of that dichotomy has never led us to assume that the two ways of viewing a language are unrelated. In fact, our standard caveat for presenting such dichotomies to our students is usually something like: "This distinction does not reflect a fact about the language or its structure; we [linguists] use it to restrict the domain of our analysis (in the interest of our time and energy)." We may not utter the final qualification, but it's there in our minds. Anyone who has analyzed any sort of linguistic phenomenon knows that we need some restriction on the domain of inquiry in order to limit the variables.

As linguists, we know perfectly well that historical information is frequently useful in the course of a synchronic analysis, not only useful, but crucial, at times. Furthermore, we also know that cultural and social information can illuminate specific diachronic phenomena, changes between one stage of a language and the next, and, thereby, account for synchronic data that can be accounted for in no other way. Yet, linguists are strangely inconsistent in their interests in language. Of particular concern to me is their willingness to ignore, trivialize, or deny the effects of male social dominance on the English language. They've used many strategies in their efforts to silence analyses that suggest a relationship between specific changes in the vocabulary of English and changes in the social structure (i. e., legislative changes in the sanctions accorded to heterosexual relationships and the relative rights pertaining to the parties so affected). Some of their arguments are simply specious, others are curiously alinguistic; all of them are perceptibly feeble. But none of these linguists are ever embarrassed. They seem disarmingly sincere!

Now, I would be the <u>last</u> to suggest a "masculist conspiracy." But I do wonder why arguments that would be laughable if proffered to account for any other area of linguistic concern suddenly become respectable when they are used to dispute evidence that sexism, a social phenomenon, has influenced the English language. The data of such arguments is spurious, so there's no need to mention it here. The polemic, however, ranges from the ingenuous to the flagrant. Consider, for example, the following quotation:

> I think the word <u>man</u>, in the Beginning, was androgynous. I don't really know, <u>nor am I interested in</u> [my emphasis], its genesis and evolution. That it is an integral part of so very many words in our vocabulary is enough to convince me that it is generic, even if only as a matter of practicality.

(M. A. Zeidner, "Words Between the Sexes: Another View," p. 10)

Zeidner assumes a patently ahistorical approach, preferring, instead, his own "intuitions" about the word man and an off-handed sense of what he considers "practical." Perhaps his essay was published in QRD with the intention that it serve as an example of doublespeak. Inherent in his refusal to be concerned for the historical development of the word is the ruin of his appeal to the present state of the language, for he has committed himself to a position that depends upon a purposefully chosen ignorance of how our vocabulary came to be as it is today. He will not accept the facts, whatever they may be, as evidence against his feelings about the language.

Refusing to consider facts about the development of a language is certainly one way to end intelligent discussion of controversial issues, but one can also make assertions without deigning to offer facts in support of them. In his textbook, Historical Linguistics: An Introduction (2nd ed., 1973), one of the standard texts in the field, W. P. Lehmann says that semantic change, unlike phonological or syntactic change, can be associated with change in social structures. The context of that discussion merits direct quotation.

> For example, the shift in meaning of Latin penna from 'feather' to 'writing implement' is related to a change in cultural activities by which feathers were used as writing implements. . . .We may also note that not all semantic changes are related to cultural changes. For example, the restriction in meaning of the word wife from 'woman,' is still in German Weib, to 'female spouse' is unrelatable to any shift in the cultural status of women in English-speaking areas.
>
> (p. 207)

As nearly as I can ascertain, without claiming mind-reading abilities, Lehmann's arbitrary exclusion of the semantic narrowing of the term wif from cultural influences is based on obviousness. That the denotative shift of penna might be attributed to a change in its function is obvious to him, while the linguistically attested shift of wif is not. He offers no evidence that might support his assertion, but carefully notes that Weib hasn't similarly narrowed its denotative range in all these centuries. Since it would be difficult, and probably stupid, to look for an internal motivation for the shift in English, what is the basis for claiming that the shift "is unrelatable" to social changes? "Unrelatable" by whom? Why is using a feather to write a change in social structures, but narrowing a previously general term so that it designates merely a legally-sanctioned bond is, de facto, not a reflection of changes in social structures? What, then, are we to regard as bona fide "cultural activities," if not such institutions as marriage? Unsupported statements and unexplained

distinctions expose a selective handling of linguistic methods of analysis.

Finally, there's a type of response that manages to combine nastiness and professional arrogance with the intent to intimidate. After Susan Wolfe and I published "Sex-marked Predicates in English" (1978), I received an extremely confused letter from a reputable linguist accusing Susan and me of ruining sex for him as well as linguistics.

> . . .to fuck up both sex and lingx in one paper was too much for me. You managed to make sex dirty. And managed to make the dirt rub off on lingx so you got lingx to be dirty too. I've met a lot of people who think sex is dirty, but none of them ever succeeded in making it dirty for me too. You and whats-her-name were the first. [His emphasis.]

In this case, we clearly have an instance of confusing the language with the activity it is used to symbolize. Susan and I merely examined the English vocabulary for sexual and reproductive activities, and pointed out that that portion of the vocabulary is semantically asymmetrical. If I recall correctly, we never used the adjective dirty, and I doubt that using it would have occurred to us, then or now. Apparently, there are unwritten taboo areas in linguistics, areas of the vocabulary that cannot be linguistically analyzed without making both the method and the phenomenon "dirty." By attempting to describe certain phenomena and, thereby, understand them, we failed to heed the "Hands Off" sign posted by our male colleagues.

But linguists cannot continue to ignore particular linguistic facts without severely damaging the discipline and its credibility. Language changes. On that surety rests the enterprise of historical linguists. The motivations for change are many and vary from instance to instance, and our certainty of attribution is obstructed increasingly as we examine data further and further from our own time. Yet, we continue to attempt to make sense of the changes we can document, and there are some kinds of change we can be sure of. That the denotative range of words can both expand and narrow, that some words cease to be used while new ones are created to take their place or to name new concepts or events, these changes are both inevitable and observable. But we cannot be selective in the kind of data we will consider in formulating our hypotheses, nor can we continue to construct hypotheses that account only for changes in well-explored areas of the language when there is evidence that undermines the generalizability of the hypothesis.

In 1978, I co-authored an article (with C. McGowan) in which the Old English terms for female and male human beings were used to illustrate the inadequacy of conventional attempts to account for semantic changes, including loss, narrowing, and borrowing, in the development of the English vocabulary. In that article, we argued that the narrowing of the semantic range of wīf and the subsequent formation of the compound wīfman cannot be accounted for in any way as long as they are discussed in isolation as though they did not belong to a larger set of common nouns used for talking about human beings. That is, they are part of a lexical system. Furthermore, the lexical set to which they belonged underwent a series of changes that involved man, wer, gyrl, boy, mǣgden and the eventual loss of many words for female and male human beings, e.g., mēowle/īdes/fǣmne; beorn/guma/secg. (These lost terms may have designated both sexes with respect to specific activities or functions. The +Male terms were used for warriors, and it may be that our translations have simply failed to notice any particularity about the now obsolete female terms.) Up to that time, none of the observed changes in the common human nouns had been discussed as a set, and our conventional explanations fail to account for the loss of so many terms to designate human beings, the addition of the feature +Male to the term man and its subsequent loss of generic denotation, and the addition of compounds, wīfman and hūsbōnda, -e, (the latter borrowed from ON), for concepts that, in the case of wīfman, surely, could not have been novel. In addition, the term girle, once a generic designating young people of both sexes, acquired the feature +Female, thereby losing its generic scope, sometime before the term boy began to appear in the language. All this between Old and Middle English.

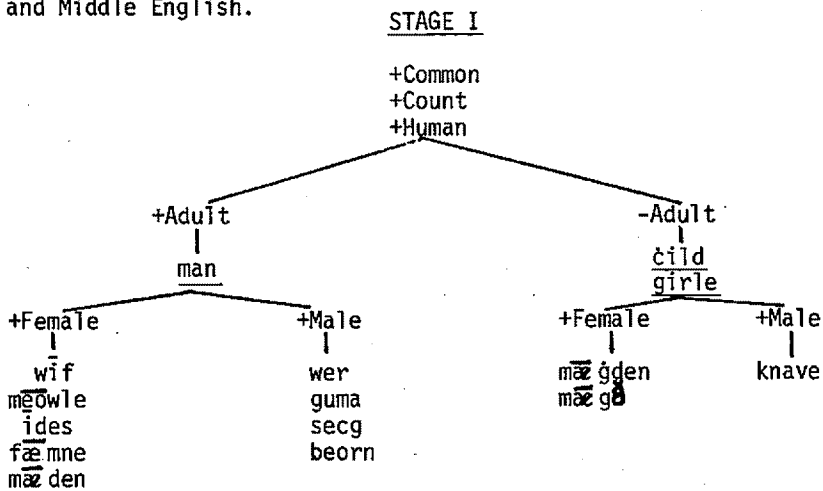

Figure 1.

By the Middle English period, this lexical set is less symmetrical than it was during the Old English period. Allowing some time for the observed shifts to occur and to become accepted usages in everyday speech, we find the internal structure represented in Figure 2 established by the fourteenth century:

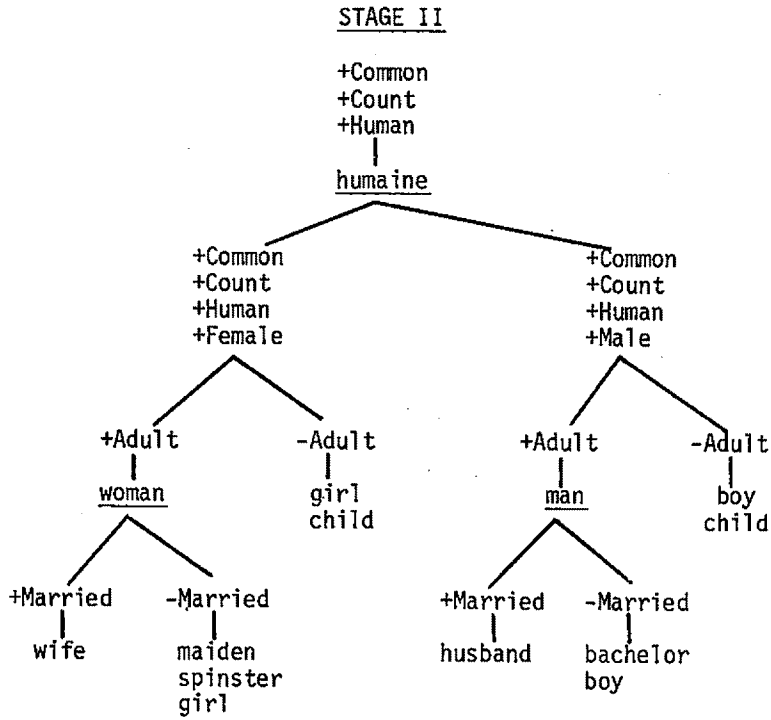

Figure 2.

Granted, these representations aren't elegant; they contain redundancies, and other arrangements of the features are certainly possible. I finally decided on this ordering because it involved less repetition of both words and features, but I have no vested interest in this hierarchy rather than another. Figure 2 does show the addition of a feature, ±Married, which is necessary to account for the semantic narrowing of wife, girl, man, husband, maiden, and spinster, and the borrowing of husband and boy, from ON and OF, respectively. The addition of this feature also creates the asymmetry of the ME set. A representation of some intermediate stage might show additional redundancies in the lexicon and gaps at specific points, at the apex, at the juncture of +Female/+Adult, and at the juncture of +Male/-Adult. These are also just the points at which we find two borrowings, humaine and boy, and the native compound wīfman.

Viewed as a system, it becomes possible to see some internal motivation for the otherwise unexplainable borrowings and compoundings. Lexical sets, like other linguistic domains, tend toward equilibrium. While they can easily tolerate redundancies (consider the plethora of terms in English for colors, automobiles, drinking vessels), they cannot be maintained if there are gaps at crucial points in the system. It seems to me reasonable to look to the culture for reasons that might explain the wholesale re-ordering of this particular lexical set, and I think the social motivation is to be found in the christianization of the Germanic tribes in Britain. (This will not, of course, explain why Weib has not changed, but it needn't.) Although it is impossible to determine the chronology of these shifts, some guesses suggest themselves: two of the changes must have occurred almost simultaneously, the narrowing of man and wife, leaving gaps at structurally significant points in the system. That is, once social importance is attached to one's marital status, the semantic structure will be altered to capture that fact. Had man retained its generic sense, humaine might not have been borrowed from the Norman French. Likewise with girle and boy, both obscure in their origins. Once marital status is equated with maturity and adulthood, both the sex and age of children require specification. (Bear in mind that children of both sexes married quite early by our standards.) I would like to suggest one other shift, that of maiden, as an important step in the processes I am discussing. The term maiden was frequently used to designate a virgin, a warrior, a woman who did not wish to marry a man. This was certainly its sense when it was applied to Joan of Arc, and in the compound maedenheap, 'band of female warriors.' As women were more and more limited in their freedoms beyond domestic chores, and chastity became synonymous with womanhood, so the sense of maiden gradually narrowed and lost the original strength of its denotative value. Once maiden came to designate an unmarried woman, that change may have hastened the narrowing of wife, necessitating the compound wīfman and its quick acceptance by speakers.

My analysis suggests two cautions which we must attend to when we attempt to explain semantic changes. First, treating any term in isolation, as did Lehmann, as though it had an existance and usage of its own, and not as a member of a larger lexical set, leads to assertions that cannot be defended. Second, we need to consider lexical sets beyond those familiarized in the standard textbooks. Recent hypotheses to account for semantic change (Givón, 1979; Lyons, 1977; Brown, 1979) assume that change in a lexical set involves the initial loss of the most specific feature. For example, Givón, supporting his assertion that "The most generic semantic features . . . survive longest" (p. 316; his emphasis), points to the development of Bantu -*pya, 'new,' from -*bi, 'child,' and to the history of the copulative verbs in various languages. While the association between youth and newness is common, such data is not sufficient to support Givón's hypothesis of semantic bleaching, the process by which words shift toward the "less concrete." The terms in the lexical set I have discussed move in the opposite direction, toward more concreteness, not away from it, and I would suggest that we may need a variety of hypotheses, not just one or two, or even three, if we are to account for semantic changes in natural languages. Finally, while we cannot invoke mysterious social change to explain anomalous changes that we don't understand, it is equally myopic to dismiss arbitrarily that possibility when it can be used to account for a broad range of data that are otherwise inexplicable.

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LEXICOSTATISTICAL RESEARCH IN TOK PISIN, ROMANCE, AND "AMERINDIAN"

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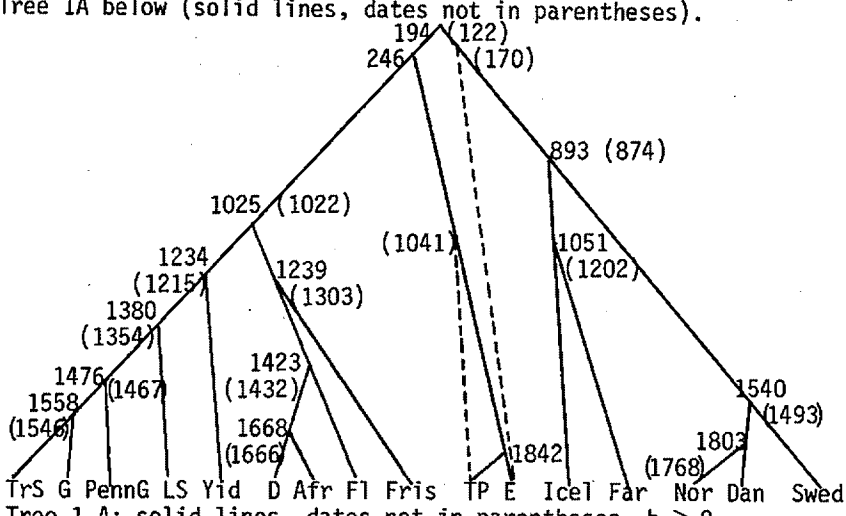
York University

1. Introduction

Sankoff 1972 and Embleton 1981 have established that there is a mathematically valid method for reconstructing the family tree for a group of related languages. This method takes account both of replacement rates (r) and of borrowing rates (b), thus representing a significant improvement over previous lexicostatistical methods (e.g. glottochronology, hierarchical cluster analysis). It has also been shown (Embleton 1981, 1983a) that an extremely high degree of accuracy, both in topology (i.e. branching-structure) and in node-dates, can be obtained for simulated data, even for values of r and b well above the values normally found in real language. The method was further tested on natural language data, first on 13 Germanic languages, using the 200-word Swadesh-list. The results were reported to LACUS in 1981, and are mentioned here only as background. Details of the new method can be found in Embleton 1981.

2. Tok Pisin

Since the results with 13 Germanic languages were very successful, it was decided to add 3 more Germanic languages to the reconstruction. These languages were Frisian, Faroese, and Tok Pisin. Values of r and b were estimated using available historical information, and the reconstruction algorithm was applied, yielding Tree 1A below (solid lines, dates not in parentheses).



Tree 1 A: solid lines, dates not in parentheses--b ≥ 0
B: dotted lines, dates in parentheses--b = 0

The topology is consistent with generally accepted views of the history of the family and the dates accord reasonably well with known historical fact. Since the matches with known historical dates are easily verified by the reader and have been discussed elsewhere (Embleton 1983b), I will confine myself here to two issues: the date obtained for TP and the two cases where the reconstructed date diverges noticeably from historical fact.

For TP, the reconstruction yields 1842. As nearly as it is possible to put a date to the origin of TP, this seems reasonably accurate. One expert in the field (Thurston, pc 1982) has informed me that the best possible estimate is mid 19th century. Salisbury (1967) does not give any actual date of origin, but states that TP was developed well before the recruitment of workers for the Queensland sugar fields in the 1870's and was already well 'established as a language of intercourse between New Guineans' by 1875. Hall (1959:265) dates the origin as the first part of the 19th century and repeats this view of the 'earliest possible beginnings [being] in the eighteen-twenties or thirties' in 1966(124). It is interesting to note that the method employed here gives such good results even for a creole, since a creole is a language where the values of r and of b are normally far higher than those found in other languages. For TP, I estimated r at 97.7% per millennium and b at 41% per millennium, from languages outside the Germanic family. Thus the method appears to be successful even for creoles.

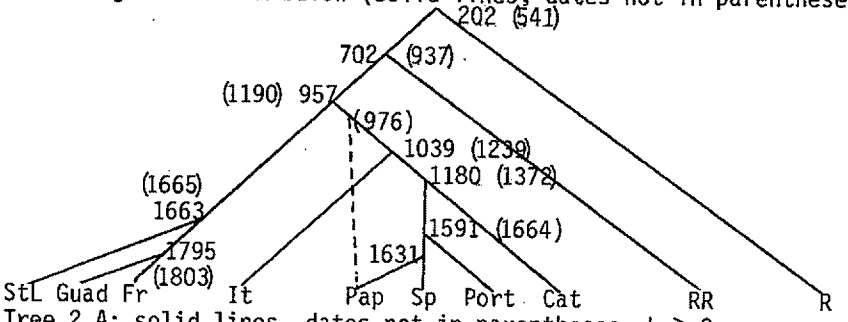
The two dates which diverge significantly from historical fact are 1380 for G-LS and 1025 for G-D. Both dates are obviously too late. This postdating is due to the extreme underestimation of the borrowing rates from High German into Low German and D, caused by 'the powerful influence of High German on the dialects to the north of it, both in their preliterary periods and ... later' (Arndt 1959:187). The borrowing rates calculated here were based exclusively on *identifiable* borrowings. Where there is suspected heavy influence from a 'prestige' language, experience leads me to believe that one should increase these rates, if necessary arbitrarily (see Section 3 below). Incidentally, Arndt (1959), using standard glottochronology (which cannot incorporate any correction for borrowing), obtained much more severe postdatings (1700 and 1575 respectively).

In Tree 1B above, dates in brackets and dotted lines represent the tree obtained by setting all borrowing rates to zero--that is, the tree that would have been obtained by previous lexicostatistical methods which did not incorporate borrowing into the reconstruction process. The most important and striking problems with such a tree involve the placement of E and the date for TP. E is incorrectly placed with the north Germanic languages because of the large number (16) of Scandinavian borrowings even within the 200-word Swadesh-list, which are erroneously assumed by such a method to be 'common inheritance' rather than borrowings. For TP, this tree dates its split from E as 1041, which is clearly false. The dissimilarity due to a large borrowing rate from the outside is incorrectly interpreted as representing a large amount of change accumulated over a longer time--in other words, a longer time depth.

The cases of E and of TP demonstrate conclusively the necessity of incorporating borrowing rates into any reconstruction algorithm that aspires to validity for natural language.

3. Romance

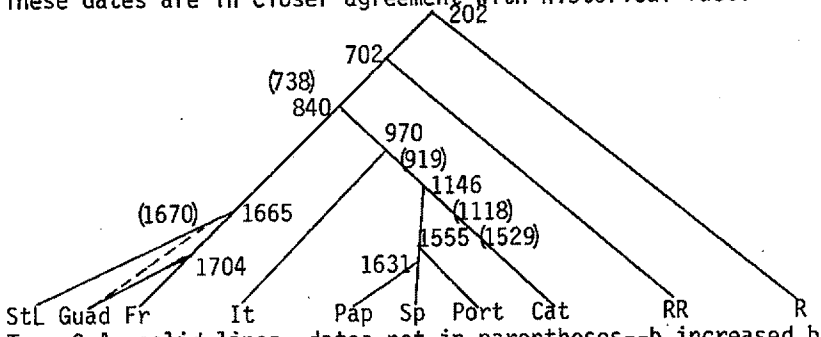
The Germanic family was originally chosen because it is large enough to be interesting, sufficient historical records exist to evaluate the conclusions reached, and there has been enough contact interinfluence to affect the tree significantly. The Romance family is much more difficult, with frequent borrowings between the languages and the continued influence of Latin. 200-word Swadesh-lists were collected, rates estimated, and the reconstruction algorithm performed for 10 Romance languages (including 3 creoles), resulting in Tree 2A below (solid lines, dates not in parentheses).



Tree 2 A: solid lines, dates not in parentheses--b ≥ 0
B: dotted lines, dates in parentheses--b = 0

Since matches with known historical dates can be checked by the reader and I have discussed some of these matches elsewhere (Embleton 1983b), I will not discuss all of the dates in detail. The dates of split for R, RR, Pap, and StL are all largely in accord with historical facts, whereas the dates for the Fr, It, Cat, and Sp-Port splits are all to a certain extent too late. The foreshortening of time depths here is due to undetected borrowing and the continued influence of Latin as a prestige and church language. Although every effort has been made to detect borrowings from Lat into the Romance languages, a borrowing can still easily go undetected. For example, it is perfectly possible for a borrowing from Lat into It to go undetected if the word was first lost and subsequently reintroduced from Lat, or if a word which might otherwise have been lost from It is retained under the influence of Lat. In the latter case, technically no borrowing is actually involved, although in some broader sense it *is* a borrowing, in that the normal replacement process has been disturbed due to the influence of another language. The first type of borrowing could perhaps be detected if very accurate records and etymological materials were available; the second type of 'borrowing' is of course impossible to detect. This is the same problem as encountered in Section 2 with the influence of High German, where it was suggested that some rates might have to be increased arbitrarily where undetected borrowing is suspected.

To check this hypothesis, the reconstruction was performed again, but with the following borrowing rates increased by half: Lat into Fr, Lat into It, Lat into Sp, Lat into Port, Lat into Cat, as well as Fr into It, Fr into Sp, Fr into Port, and Fr into Guad (since Fr also functioned/functions as a prestige language for many members of the Romance family). The corresponding rates for R, RR, Pap, and StL were not increased, because these languages experienced much less influence from Lat and the other Romance languages. Most of the influences here were from the outside (e.g. Slavic, Greek, Hungarian, and Turkish for R) and hence much more easily detected. The results of the reconstruction with selected borrowing rates increased by half are given in Tree 3A below. These dates are in closer agreement with historical fact.



Tree 3 A: solid lines, dates not in parentheses--b increased by ½
B: dotted lines, dates in parentheses--b increased by ⅔

Obviously, it is very difficult to ascertain *how* much these rates should be increased arbitrarily. Ideally the lexicostatistician should work closely with a specialist in the particular family; this will be returned to in Section 4 below. However, in the absence of an expert colleague, other tactical approaches may be possible. For example, both StL and Guad have Fr as ancestor. Both islands have largely similar histories except for the fact that E has functioned as a prestige language in St. Lucia since the British conquest in 1803, whereas Fr functions as a prestige language in Guadeloupe. We also observe that r for StL is roughly 1⅔ times r for Guad. Presumably the difference is due to the prestige of Fr 'slowing down' the normal replacement process in Guad. In other words, we do have a very rough estimate of the amount of undetected borrowing from Fr into Guad.

Increasing b by approximately ⅔ would compensate for this. The results of the reconstruction with the same set of selected borrowing rates increased by ⅔ is given in Tree 3B above. Agreement with historical fact is even closer.

It should hardly be necessary at this point to demonstrate the necessity of incorporating borrowing into the reconstruction process, but in case any reader is not yet convinced, I present Tree 2B above, which is the tree that would have been obtained by previous lexicostatistical methods. Two major problems are evident: the date for Pap is given as 976 which is clearly false; and many dates are even more severely postdated than in Tree 2A, since

later borrowings from Lat and to a lesser extent Fr are misinterpreted as representing direct common inheritance.

4. "Amerindian"

The method has been seen to perform well for natural language data, demonstrated by its application to two families for which a large body of established linguistic opinion exists for comparison. The real purpose behind the development of a reliable lexicostatistical method is to aid in the establishment of historical trees for families whose history is disputed or unknown. Such a family is Wakashan, spoken on Vancouver Island, along the adjacent British Columbia coast, and in northwest Washington State. The 6 languages are: Haisla, Heiltsuk, Kwakiutl (North branch), and Nitinaht, Nootka, Makah (South branch). 200-word lists were collected by Lisa Sawyer, a fluent speaker of Nitinaht (Sawyer 1982, pc 1983). The lists are not Swadesh-lists, but lists of vocabulary basic to Wakashan culture (e.g., hunting and fishing terms, regional flora and fauna, terms used in potlatching, as well as many items also on the 200-word Swadesh-list). One of the main advantages of the present method is that one is no longer restricted to a Swadesh-list. Since account can be taken of borrowing, it is not necessary to have a word-list which is chosen especially for its resistance to borrowing.

The Wakashan tribes have an established network of 'potlatch' relationships, and it is at the potlatches that the various linguistic groups come into contact.

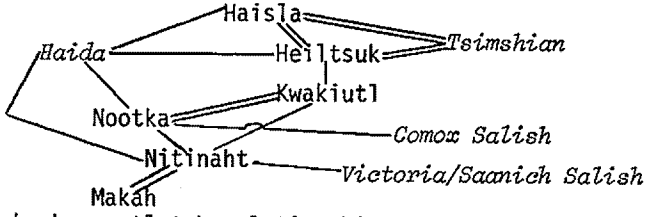
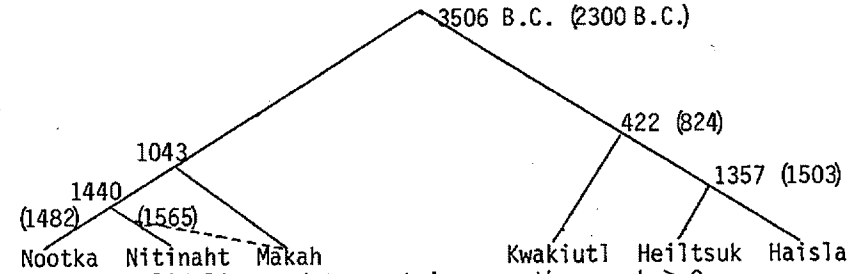


Figure 1: Wakashan potlatch relationships
═══corresponds to extensive potlatch relationships
———corresponds to less extensive potlatch relationships
Names in italics represent non-Wakashan groups

Pairs of languages with extensive potlatch relationships were estimated by Sawyer to have a borrowing rate roughly twice that of pairs with less extensive potlatch relationships. On the basis of experience with other languages, these rates were set arbitrarily at b=8% per millennium for pairs with high borrowing rates, b=4% per millennium for pairs with low borrowing rates, and b=0% for pairs with no potlatch relationship. Although the *actual* values assigned to the rates are arbitrary, this will affect only the node dates and not the topology of the reconstructed tree (for proof, see Embleton 1981:90, 113).

The tree obtained is given as Tree 4A. No actual historical evidence with which to compare the result is available, but a small body of linguistic opinion exists. The split into a North



Tree 4 A: solid lines, dates not in parentheses--b ⩾ 0
B: dotted lines, dates in parentheses--b = 0

and a South branch is generally accepted (Lincoln and Rath 1980, Foster 1982, Jacobsen 1979). I obtain a date of 3506 B.C. (approximately 5500 B.P.), slightly earlier than Sapir (1911, 1938), but much earlier than 2900 B.P. (Jacobsen 1979, Swadesh 1953) or 2000 B.P. (Swadesh 1948). Sawyer (pc 1983) feels that my date or even an earlier date would be in accord with legends told by the Nitinaht of a great flood. Thus my date agrees with some opinions but disagrees with others.

The actual topology of the South branch is in dispute. My reconstruction indicates that the closest genetic relationship is between Nootka and Nitinaht, according well with Sawyer (1982), although her analysis is based entirely on phonology. In contrast, Klokeid (no date) feels that Makah and Nitinaht are closer. Jacobsen (1979) gives the time depth separating Nitinaht and Makah as approximately 1000 years, which (without explicit statement) implies agreement with Klokeid. Sawyer (pc 1983) feels that both Klokeid and Jacobsen have been misled by the large number of borrowings between Nitinaht and Makah, misinterpreting borrowings as common genetic inheritance. That this would indeed be the result of such a misinterpretation is confirmed by Tree 4B. Incidentally, Jacobsen's time depth of approximately 1000 years agrees well with the 940 years determined here. For all the other dates and for the topology of the North branch, the only evidence that I have so far is that they do not conflict with Sawyer (1982, pc 1983), Rath 1981, or Lincoln and Rath's comment that the Haisla and Heiltsuk are 'conscious of being related to each other'(1980:4).

Another family with largely unknown history is Athapaskan. It is however more difficult to apply the method to Athapaskan than to Wakashan. The major problem involves the reliable determination of borrowing relationships, due to the absence of established networks corresponding to the Wakashan potlatch relationships. Although the lexicostatistician could be sure that the three major geographically-separated groups (Northern, Pacific Coast, and Apachean or Southern) did not borrow from one another, the traditional comparative-historical method would appear to be the only way to determine borrowing patterns (and rates) within these groups. A more minor problem involves the quality of the available 200-word Swadesh-lists, which a specialist in Athapaskan (Rice, pc 1982) considers very unreliable. Obviously such a prob-

lem can be corrected by appropriate fieldwork. The Athapaskan case is unfortunately more typical of the general situation obtaining for 'Amerindian' families than is the Wakashan. The lexicostatistical method can still be applied, but it will require very careful and skilled application, preferably in close consultation with an expert in that particular language family, in order to minimize the problems of unreliable word-lists and determination of borrowing patterns. There are no easy yet reliable shortcuts.

ABBREVIATIONS

TrS	Transylvanian Saxon	StL	St. Lucian creole
G	(standard) German	Guad	Guadeloupian creole
PennG	Pennsylvania German	Fr	(standard) French
LS	Low Saxon (Hamburg dialect)	It	(Tuscan) Italian
Yid	Yiddish	Pap	Papiamentu (Curaçao)
D	Dutch	Sp	Spanish (Madrid)
Afr	Afrikaans	Port	Portuguese (Lisbon)
Fl	Flemish	Cat	Catalan (Barcelona)
Fris	Frisian	RR	Rhaeto-Rumantsch (Sursilvan)
TP	Tok Pisin	R	Rumanian (Bucharest)
E	English	Lat	(Plautine) Latin
Icel	Icelandic	r	replacement rate
Far	Faroese	b	borrowing rate
Nor	Norwegian (Riksmål)		
Dan	Danish		
Swed	Swedish		

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VI

DISCOURSE STUDIES

PROPOSITIONAL AND PREDICATIONAL ANALYSIS IN DISCOURSE DESCRIPTION

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Language can be viewed both as a distinct form of human communicative behaviour (the dynamic perspective) and as the complex realizatory code-cycle or 'grammar' which such behaviour can be thought of as activating. Both perspectives are possible whether language is viewed from the standpoint of encoder or of decoder, or, as I have recommended, from both standpoints (Gregory 1982b). The stratally organized code cycle is the consequence of the synoptic perspective on language, one which has largely dominated the last quarter of a century of linguistics, perhaps because of the concern with modelling competence. What I am suggesting, however, is not a competence-performance dichotomy but a code and behaviour approach (cf. Halliday in press), not an encoder or decoder orientation, but a communicative one. In the 'communication linguistics' version of systemic functional grammar which I am developing with the help of Karen Malcolm and my postgraduate students at York University, we propose that if a linguist's concern is to make statements about discourse which are revealing and demonstrably of practical use, it is necessary to see language both as activity and as code. So we distinguish between planes of experience (situation, discourse and manifestation) in the linguistic activity, and strata (semology, morphosyntax and phonology/graphology) in the codal resource of the grammar (cf. Gregory 1982a&b, Malcolm 1982 a&b).

My concern in this paper is to raise some questions about the relationships between the analysis of propositions and predications in the semologic stratum in the light of their morphosyntactic realization in sentences, clauses and nominal groups, and phasal analysis of the discourse plane of experience.

In my paper presented to the Ninth Meeting of this Association (Gregory 1982a), I proposed a distinction within the semologic stratum of synoptic description between proposition and predication. Proposition was reserved as a term for those predications (predicates and their arguments/process selections and attendant roles) which have also selected from speech function systems (for instance between comment and directive, amongst statement, response, question, command etc.), and from a full range of message organizational systems concerned with matters of focus (message 'starting points') and prominence (message 'highlights'). In the morphosyntax of English, it follows then that propositions are typically realized by independent clauses because they, as Halliday has explicated, are instances of the syntactic unit which is the locus of configured and simultaneous selections from transit-

ivity, mood and theme systems, the phonological realization of which also involves selections from the information system of tone groups (cf. Halliday 1977). For example: the independent clause 'John knew the answer' realizes a proposition, the predicational features of which (Processor-Mental Process: cognition-Phenomenon) are realized by the selection of KNOW as lexical verb and of Objective Complementation in the transitivity system of the morpho-syntax. The proposition's speech function of Comment: statement is realized by the selection of indicative declarative in the mood system of the clause (Subject preceeding finite Predicator). The organization of the proposition's message has JOHN-as-Processor in focus realized by the unmarked selection in the syntactic theme system, and KNOW-as-Process is given semologic prominence as the New element in the information structure of the clause's phonological realization: 'John knew the answer'.

So, in the description of English we are developing (Gregory 1982a, 1982/1983) independent clauses are seen as realizing the Propositional element in the structure of sentences, in which they are in a relation to optional Link, Topic, Vocative and Attitudinal elements. The Propositional element may also be realized by an $\alpha\beta$ complex as in 'He'll go (α) if you come (β)'. Clauses realizing β elements, 'tempering' clauses (conditionals, concessives, resultatives etc.), are recognized as realizing predications rather than propositions because they are not themselves free to realize the modal selection of speech function and have only limited possibilities of textual contrasts related to message organization.

The same, with one notable exception, is so of dependent clauses embedded within other clauses or groups. The notable exception involves the discourse reporting of speech events in which embedded syntactic units have both predicational and speech function realizatory value. In the case of quotative structures, traditionally Direct Speech, there is no problem arising from what I have postulated about the relationships between syntactic realizations and semologic propositions. What is embedded in such structures is at least a sentence realizing discourse: 'She said: 'Home is where I'm going now, you slob'. In this instance the syntactic analysis would show an embedded sentence realizing the Objective Complement of 'said' and that embedded sentence has a Vocative element, realized by the minor independent clause 'you slob', and a Propositional element realized by the major independent clause 'Home is where I'm going now' which has selected from transitivity, mood and theme systems. It also, at the rank of sentence, enters into further textual alternatives (realizing message organization) with the Vocative element: 'You slob, home is where I'm going now'; 'Home is where I'm going now, you slob'. Similarly, if the quotative objective complement is more than one sentence, the contained propositions can be related as quotational within the proposition realized by the reporting independent clause. These I propose calling quoted propositions in the discourse analysis. Now, the notable exception to the rule that embedded clauses are predicational and non-propositional as reali-

zations occurs in what is traditionally known as Indirect Speech. Here we have as syntactic realization a sub-class of clause (as opposed to sentence or discourse) occuring at Objective Complement in an independent clause with a Predicator realizing verbalization. For example: 'He asked whether you were going'. If this is contrasted with:

'He asked you to go'.

and

'He said you were going'.

it becomes apparent that all three embedded clauses are realizing the predication: Action Process [GO], Agent [YOU], and that they contrast as regards the speech function features: question, command, statement, respectively. Such predication/speech function configurations are realized, however, with limited message organization possibilities. Their realizatory clauses do not select for marked theme although their phonological realization indicates what is informationally new, and so realizes semologic prominence. Such propositions I propose calling assigned propositions and they can be further distinguished as to whether they are user assigned, receiver assigned, or other assigned: (e.g. I said you were going/ You said you were going/He said you were going)

To summarize this section of the paper: propositions are typically realized syntactically by independent clauses; in Indirect Speech reporting, assigned propositions are realized by a sub-class of dependent clause; in Direct Speech reporting, quoted propositions realized by independent clauses may be contained within verbalizing propositions. Predications which are not fully propositional are realized by dependent clauses and nominal groups.

It is important to note that nominal groups may realize dual predications in which an action or mental process predication simultaneously realizes an identificational or classificatory relation. This is the case, I suggest, in nominal groups such as 'the broken window', and 'a known criminal'; the Action Process - Patient predication of the first and the Mental Process-Phenomenon of the second serve also to realize Identifier-Identified and Classifier-Classified relational predications respectively. The relational predications are given precedence in our analysis because they are typical of the nominal group as the syntactic realization of semologic relations, cf. 'The new man' (Identification), 'a stone wall'(Classification). Nominal group realization of semologic predications, like passive voice clauses, permits the suppression of Agent or Processor, and seems to be much used in the reports of government commissions on government failures. Syntagms such as 'neglected matters' and 'unpracticed emergency procedures' allow a commission to report on events without being explicit as to who did the neglecting or who failed to practice emergency procedures.

Predicational and propositional analysis and the relation of propositions and predications to each other are clearly crucial to the description of discourse. And this has been recognized. Fifteen years ago Gleason's seminal work on the Event Line of Actions and Connections plotted in terms of Participants and Roles

(Gleason 1968) illuminated the analysis of narrative discourse. Important contributions have been made by tagmemic linguists such as Longacre (1970, 1976), and more recently Peck (1981) to the understanding of statement and propositional calculus; Beekman, Callow and Kopesec (1981) have presented the propositional cluster as propositional configuration. My collaborators and I are learning much from Fleming's interpropositional schemata (1978), and, in our own tradition, from Martin's systemic approach to conjunctivity (Martin 1981), and Martin and Rothery's use of explicit and implicit conjunctivity in the analysis of writing (Martin and Rothery 1980, 1981). What I want to stress briefly is a multi-functional approach to the relations on the discourse plane of experience amongst propositions and predications as I have distinguished them.

If a proposition is seen to have the simultaneous characteristics of predication, speech function and message organization this means that it has ideational, interpersonal and textual meaning in Halliday's terms (1973, 1978), and, as a consequence, may relate in discourse to other propositions in terms of one or more of such types of meaning. The logical sub-component of the ideational is involved in the relationships between the propositions realized by these two contingent sentences: 'He went to the corner store. He bought cigarettes and cream'. The conjunctions 'and', 'then', 'in order to' and 'where' are implicitly admissable. Furthermore there are experiential relationships between them because of a shared participant in analogous roles (realized by 'He') and their referential conceptual consonance, morphosyntactically realized in the lexical string 'corner store', 'buy', cigarettes', 'cream'. Interpersonally they relate in a parallel way rather than through what Halliday and Hasan (1976, 1980) would recognize as a truly cohesive relationship; both have the speech function of statement, and both are without attitudinalization. Textually, their messages are also organized in a parallel way with unmarked theme realizing focus, and phonological new towards the end of the message realizing prominence.

If the second proposition had been realized by the sentence 'There he bought cigarettes and cream' it would have been experientially related to the first even more cohesively by 'sharing', through textual reference, the concept realizing the Locative role of the first as a circumstantial role of Place in its own predicational stucture, and would have had two points of prominence, one its Place role ('There') as marked theme and phonological new parallelling the locative prominence in the first proposition, the other 'cigarettes and cream'. Again, if the two contingent sentences constituted an exchange ('Why did he go to the corner store?' 'He bought cigarettes and cream'.), the interpersonal speech function relationship of question and response would be cohesive in the semologic stratum.

Of course, I am not suggesting that linguists of the systemic-functional school are the only contemporary linguists who recognize a plurality of functions, or kinds of meaning, in language. The Hartford school of stratificational discourse analysis associated with Gleason recognized meaning, mode and manner (cf. Cromack 1982);

Lockwood (1981) has distinguished cognitive, emotive, and stylistic meanings; Beekman, Callow and Kopesec (op. cit.) referential, situational, and structural meanings. These all have some correspondence with the schemata of ideational, interpersonal and textual metafunctions used by systemicists following Halliday. As I have said elsewhere (Gregory 1982b) the major difference seems to be that the multi-functional perspective may more thoroughly permeate systemic statements because the functions are seen to be both extrinsically and intrinsically involved in language, as Halliday's 'Modes of meaning and modes of expression article' (1979) clearly demonstrates.

Within the systemic tradition, Malcolm and I, in several recent papers (Gregory 1981, Gregory and Malcolm 1981, Gregory 1982 a&b, Malcolm 1982 a&b), have been developing a multi-functional analysis of discourse in terms of phases and transitions. A phase is a stretch of text in which there is a significant measure of consistency in what is being selected and realized ideationally, interpersonally and textually. Transitions in and out of phases are signalled by changes in the kind of choice from one or more functional components. A transition may be anticipated and included in the first of two contingent phases, and then fully accomplished in the successive phase. Phases, considered the same at a certain degree of delicacy, may re-occur. However, phasal analysis is not identical with inter-propositional and inter-predicational analysis; it involves, at least in theory if not yet in practice, all three strata of the code, and all ranks within a stratum.

We also find that phasal boundaries may occur in the midst of propositions and predications which are related. For example, in narrative fiction, one can have a sequence such as this:

'She walked into the room. Noticing his shirt, trousers and socks lying on the floor she bent and picked them up. Carefully folding them she put them under her arm, turned and strode to the door. However she did not leave immediately. Instead she swung around and said:

"Home is where I'm going, you slob. I hate you and your fat gut and your sloth and your chauvinism and your inability to get it up. I don't care much for your bad breath either and you should really start using a deodorant. Did you really think I was going to put up with you for long? Not bloody likely!'

To avoid having to obtain permission to quote at length I wrote that passage myself, but it is not atypical of its discourse type. Inter-propositional analysis as I have outlined it would indicate all the monologue as quoted propositions within the compound proposition realized by 'Instead she turned and said: "X"'. Conjunctively it is integrated by the relationship between 'However', and 'Instead'. Phasal analysis, on the other hand, would indicate the monologue as a distinct phase because of its tri-functional congruity which is different from that which precedes it. Past tense has largely been replaced by present, action processes by mental processes of reaction, declarative mood is now varied with interrogative and a minor exclamatory clause, third

person reference has been replaced by first and second. There is attitudinal lexis in the monologue and the predominant conjunction is 'and'. It is clearly a different phase of discourse.

There is, of course, a need for both kinds of analysis. A multi-functional analysis of the relations amongst propositions and predications is important in its own right. They are key units of meaning and of discourse as the exchange of meanings. The appended figure suggests how such analyses may be displayed and the information they may contain.

It is by no means presented as being definitive. There are charting and notational difficulties whenever one sets out to show a complex of simultaneous relationships. This is particularly so in texts where there is much syntactic embedding realizing quoted and assigned propositions within propositions, and predications within propositions. Advice from other linguists will be gratefully received. We all share the problems of showing how meanings of different kinds relate to each other, how meanings are shared between interlocutors, and how the codal resources of a language are used to manifest discourse in situation.

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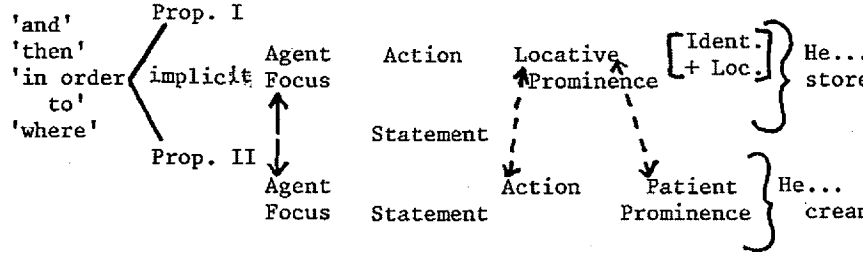
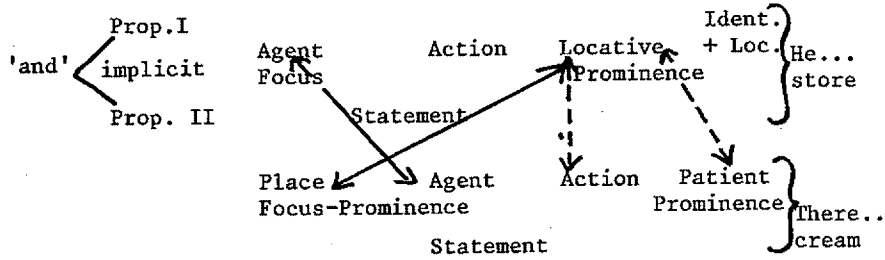
Figure: Some Inter-propositional relations

Key < = conjunctivity ↕ = conceptual identity ↕ = conceptual consonance [ ] = predication within role + = dual predication.

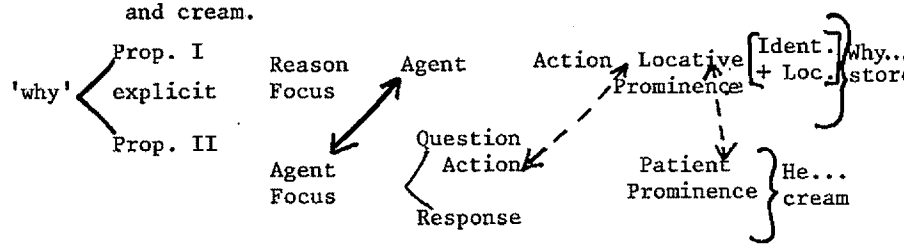
Text A. He went to the corner store. He bought cigarettes and cream.



Text B. He went to the corner store. There, he bought cigarettes and cream.



Text C. Why did he go to the corner store? He bought cigarettes and cream.



PARAGRAPH STRUCTURE OF BIOMEDICAL SPEECHES: PRELIMINARY REPORT

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Since 1976, I have been engaged in a study of how biomedical scientists communicate results of their research both to peers and to the laity. My studies are not limited to traditional linguistics, nor do they cover the medical field, i.e., the delivery of health care, the technological result of pure biomedical research. I have been particularly interested in how biomedical scientists make their first public communication of research results to colleagues, which is accomplished at professional meetings in one of two ways: reading a paper, the traditional means; and the increasingly popular poster presentation (for an extended discussion of design and presentation of posters, see Dubois 1983a; for a discussion of the poster as a device for popularization at the highest level, see Dubois 1983b).

To date, I have looked at the structure of slide talks, as papers are called (Dubois 1980a), at how slides form the backbone of the talks (1980b), at the rhetoric of the talks, with special emphasis on speaker credibility (Dubois 1981a), at the vocabulary and syntactic phenomena which cooccur with mention of treatment painful to lab animals (Dubois 1981b), at the regulatory language forms used to get slides and lights on and off (Dubois 1982a), and at the function of intonation contours (Dubois 1982b).

The talks are rarely written out in full and then read from typescript, although that happens occasionally. Instead, the presenter typically makes careful notes for his introduction, perhaps writing out sentences, and delivers it with the aid of a lavaliere microphone from a lectern at audience left on a slightly raised platform. The body of the talk is organized by slides--no biomedical speech I have seen in the four meetings I have attended lacked slides--which are projected onto a screen at center back. Almost all presenters leave the lectern and approach the screen in order to point out significant parts of the slides with the aid of a power pointer. Since speakers cannot carry notes with them, and indeed, few would need to, the body of the speech for these speakers cannot be written out and thus is delivered in a more informal style, giving it the appearance of fresh talk (Goffman 1980). It is important to remember that in the 52 slide talks I have studied, there is a great deal of inter- and intraspeaker variation. The termination of the speech is typically delivered from the lectern; hence, wording is usually more rehearsed than that of the body.

In the present article, I make a preliminary report on the paragraph structure of the biomedical slide talks.

Materials and Methods

In 1979, I attended the 63rd annual meeting of the huge Federation of American Societies for Experimental Biology (FASEB), which lasted fourteen days and included more than 16,000 scientific registrants, a number which does not reflect the actual number in attendance, since there were many who accompanied the scientists and also many representatives of commercial enterprises and publishing houses. I observed and audiotaped five sessions of slide talks, from which I transcribed 52 of the twelve-minute talks, all those presented by scientists who struck me as having native compentence in any variety of English.

To investigate the semantic organization of the information within the major divisions of the slide talks, I chose the Longacre paragraph apparatus (1980), which in written texts uses the sentence as the unit of analysis. The sentence cannot be the analytic unit for speeches, because they contain utterances which are not sentences. Moreover, as Longacre points out, even in writing, "the constituents of a paragraph are not necessarily sentences." Instead, I chose as the basic unit of analysis the tone unit (also called tone group, information unit, breath group, etc.), which is a natural entity of speech, a group of words defined by contour + pause (Chafe 1980). To indicate tone groups, I used the following code:

Code	Contour
\	3-2↑
,	3-2
-	3-3
;	3-4
:	3-1↑
.	3-1
=	2-2

I then indicated paragraphs and their constituents with code as shown below, in order to put the talks on floppy disks, for automated computer corpus production and statistical analyses. In addition to codes for major units of the speeches, indicated by angle brackets, and for paragraphing, the disks contain word and syntax codes, preceded by / and [respectively, similar to those used for the Survey of Spoken English (Svartvik et al. 1982), in the hope of eventual comparison with that corpus of spoken English and with the Brown Corpus (Francis 1971) as well. An example is shown in figure 1. The present pilot study reports results from one session, Comparative Physiology of Respiration (S4), of the 1979 FASEB meeting, which consists of 12 papers (A1-A12), not all of which have had paragraph analysis completed, although tone groups have been marked in all.

```
D1 4 1
7 18 83

    <I <W <K <Q          (TCN (TCNB1?

1     $ AND /CA IF /CC [N:HEAD:NOUN:ADJ:NOUN END /NC [J TIDAL /JA ] GAS /NC
      PRESSURES /NC2 ] ,

2     [V:MODAL COULD /VM9 [V:PASS BE /VBO USED /VAN ]2 -

3     [P WITH /PA [N:HEAD:NOUN:ADJ:DET THE /TA [J ALVEOLAR /JA ]
      VENTILATION /NC EQUATION /NC ]2 ,

4     [V:INF TO /PD ASSESS /VAO ] [N:HEAD:NOUN:PPH GAS /NC EXCHANGE /NC ,

                                        (EP (EPT

5     [P IN /PA [N:HEAD:NOUN:DET THE /TA GARTER /NC SNAKE /NC ]3 .

                    )                   (EPP

6     THAMNOPHIS_ELEGANS /XX .

>   <U                )3    (TCNB2

7     [N:HEAD:ADJ:DET OUR /TB [J EARLIER /JAR ] DATA /NC? ]
      [V:PAST SUGGESTED /VAD ] ,

                                        (EA (EAT

8     THAT /CD [N:PER IT /RC ] [V:PAST COULD /VM9 ] [A NOT /AN ] .
```

FIGURE 1. SAMPLE OF CODED SLIDE TALK

Results and Discussion

Just in case a justification of the use of tone group as basic unit is needed, one is evident. The tone unit has a physiological basis, of course, it being impossible to utter 35, 68, 985 words without breathing; there is also a general relation of syntax and tone group, but not an absolute one. Superimposed on the physiological and syntactic is a meaning function, i.e., the tone groups act to convey the content of the slide talks (Dubois 1982b).

A spot check of tone groups in S4 revealed an average and median of 5.47 words per tone group, compared to 6.01 in the pear stories (Chafe 1980) narrated by Berkeley female undergraduates. Individual averages ranged from 4.38 to 7.5, which shows a considerable variation in speaking speed. What is more important here is that the spot check of tone units in S4 revealed a range of 1-13, proof that the tone group is not a purely physiological unit.

In the first seven talks of S4, the following Longacre paragraph types have been found in canonical form, with paragraph code indicated:

Type	Code	Type	Code
Simple	(S-	Antithetical/Contrast	(A-
Coordinate list	(C-	Antithetical	(AA
Equal weight	(CE	Contrast	(AC
Last item weighted	(CL	Logical Relations	(L-
Alternative	(R-	Conditional	(LC
Only two	(RT	Result	(LR
More than two	(RM	Embellishment	(E-
Temporal	(T-	Amplification	(EA
Chronological	(TC-	Paraphrase	(EP
Narrative	(TCN	Derived Interation	(D-
Procedural	(TCP	Simple	(DS
Simultaneous	(TS-	Stim./Resp.	(DS
Narrative	(TSN	Complex	(DD
Procedural	(TSP	Execution	(DC

The following following types are so far absent: Induction, Attestation, Identification, Exemplification, Comment, Compound Interaction, and Field of Vision. It is entirely possible that some will be found in subsequent speeches. Simple Interaction (IS and Stimulus/Response Interaction (IR types occur, but in truncated form, i.e., the resolving utterance is not a spoken, but a nonverbal response such as turning slides or lights on or off. Three possibly new types are provisionally identified, Logical Purpose (LP, Temporal Chronological Process (TCP, and Temporal Simultaneous Process (TSP. The latter two are identified notionally, but whether they are so different as to have unique markers (transitional adverbs) awaits further analysis, the result of which may be to collapse them with other

categories.

Since the speeches have a much greater narrative character than do journal articles, it is no great surprise that the most common paragraph type is the Temporal Chronological Narrative. Suffice it to say here that the slide talk partakes of the character of a personal narrative: an account of what I/we did in the laboratory. But it is by no means a straight linear account such as the story of Little Red Riding Hood. The embedding of one paragraph into another is routine, the most common embedded type being the Embellishment paragraph, either as Amplification or Paraphrase. The following example demonstrates the embedding of a Paraphrase paragraph into a buildup (basic unit) of a narrative paragraph:

```
(TCNB          (EP (EPT:
Iron oxide particles ,
                Stimulated a similar cellular response ,
                (EPP
                That is -
                an influx of these same iosynophilic
                granulocytes .
```

The example is particularly clear in that it has a paraphrase marker, that is, and it illustrates the fact that a constituent of a paragraph may itself be an embedded paragraph.

Perhaps the most interesting function of paragraph embedding is as a peak-marking device. S4A3 was a report of an accidental discovery: animals had to be cooled down in order to insert catheters to measure blood alkalinity, and a chance measurement of the cooled animals' blood resulted in the most interesting finding of the study, a peak of excitement marked by embedding to a depth of six, as shown in figure 2.

The paragraph illustrated in figure 2 shows one of the reasons why biomedical slide presentations must be difficult for the hearer to process. In addition to the burden of the terms used, the multiple embeddings add greatly to processing difficulty. Moreover, contrary to classroom lecture practice or the practice in a public lecture (Goffman 1980), the slide presentation must be compacted into 12 minutes, and in an effort to crowd in all the necessary information, most speakers choose to admit nearly all advance organizers, i.e., those notices of structure which help the listener to put what is coming into a coherent framework.

If the presentations are hard to follow because of multiple embeddings and difficult concepts, they are, as Ziman (1974) has indicated, not burdened by complicated logic such as found in technical philosophy; indeed, the speeches employ only common, everyday logical paragraphs, and relatively few of those. Logical relation paragraphs are a matter of personal choice, with S4A2 using only 1, S4A1 10 (of which 8 were embedded), and S4A3 12 (of which only 2 were embedded). Of these 23 logical relations paragraphs, only two were of the if-then type. A far

```
(AA  (AAT
This is consistent with PH data .
(AAA1     (AA (AAI
But for the animals that were cold ,
          (AAT      (TCP (TCPS1
          PCO2 appears to be ,
                                (EA (EAT
                                Relatively flat .
                                (EAA1
                                It's relatively constant ,
                    At about fifteen -
                    (TCPS2    (TSP (TSPS1
                    And then only slowly comes back to normal
                              (TSPS2
                              As this animal warms up .
          (AAA      (EP (EPT
          Bicarbonate ,
                    On the other hand =
                              (EA (EAT
                              Falls ,
                              (EAA1
                              Appears to fall as the animal warms /
                    (EPP1
                    The animal is dumping CO2 ,
                    (EPP2     (TCP  (TCPS1
                    He is becoming more alkaline ,
                              (TCPS2    (TSP  (TSPS1  (EA  (EAT
                              And then it comes back -
                                                    (EAA1
                                                    Starts to come back to normal ,
                                          (TSPS2
                                          As the animal warms up .
```

FIGURE 2. PEAK MARKING, WITH SIX LEVELS OF PARAGRAPH

more common--and still more elementary--means of reasoning is the use of antithetical paragraphs, with S4A2 using 7 (all embedded), S4A3 14 (10 embedded), and S4A1 17 (15 embedded). Of these 38 antithetical paragraphs, only 5 were of the contrastive type.

Analysis of the number and distribution of paragraphs in the speeches, it is hoped, will eventually permit characterization of the difference between those papers which more nearly resemble journal articles, i.e., written style, and those which more nearly resemble classroom lectures, i.e., more informal, spoken style. As a beginning of the analysis, Table 1 shows a comparison of the number and distribution of paragraphs in A1, A2, and A3, with A2 being the most prepared of the three. There is a wide range of individual variation both in number of tone units, with A1 having 25% more than A2, with A3 in between, and in number of paragraphs, with A3 having 69% more paragraphs than A2, with A3 in between. It is the distribution of paragraphs that permits a tentative identification of styles: all three have quite near the same number of first level paragraphs, but at the second level (the first embedded level), A2 has 68% but the other two have noticeably less, around 53%. A2 evidences the "read" style, the other two the "speech" style, a difference that is confirmed in embeddings. A3 has 2% of his paragraphs embedded at levels 5 and 6, embeddings not matched by either of the others. It remains to be seen whether there will be dialects of the spoken style identifiable by levels of embeddings.

As noted above, the introduction of the slide talk is prepared more carefully than the body by more speakers, even those who later shift to greater informality. In an effort to determine whether the difference between introduction and body can be characterized by paragraph statistics, an analysis of number and distribution of introductory paragraphs in A1 and A3 was made (see Table 2), since A1 and A3 grouped together as informal with respect to total embeddings. There was considerable range in length of introduction (20-42 tone units) and consequently in number of paragraphs (6-11). The paragraph distribution does not appear to pattern, leaving two possible conclusions: more introductions must be included in order to see patterns; or style will show up only in entire speeches, i.e., the difference between introduction and body of speech is less important than that across speakers.

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TABLE 1. COMPARISON OF PARAGRAPHS OF A1, A2, AND A3

ABSTRACT	TONE UNITS	PARAGRAPHS			PARAGRAPH DISTRIBUTION						
		Total	Average Length	Number Types	Unembedded	Embedded	2	3	4	5	6
1/4/2	259	68	3.8	11	30%	69%	68%	26%	06%	-	-
1/4/1	325	87	3.7	16	31%	69%	50%	37%	13%	-	-
1/4/3	305	115	2.66	15	32%	68%	53%	33%	12%	01%	01%

TABLE 2. COMPARISON OF PARAGRAPHS OF INTRODUCTIONS OF A1 AND A2

ABSTRACT	TONE UNITS	PARAGRAPHS		PARAGRAPH DISTRIBUTION				
		Total	Average Length	Unembedded	Embedded	2	3	4
1/4/1	42	11	3.8	18%	82%	42%	33%	22%
1/4/3	20	6	3.33	33%	67%	50%	50%	--
1,3	62	17	3.64	24%	76%	46%	38%	15%

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TECHNIQUES OF REQUEST: IN QUEST OF ITS UNIVERSALITY

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If you were one of our informants in Berlin, we would ask you to act out a scene which goes as follows:

> You are living in a big, modern apartment house where nobody knows each other. Next door lives an elderly lady. Her name is Mrs. Meier. You hardly know her. You are a very friendly and polite person and greet her every time you see her. However, you have the impression that for some reason Mrs. Meier was bothered by you. Maybe you had turned the radio on too loud, or your friends had stayed too long and made too much noise late in the night. But you remain friendly towards her. - One day, while you are cooking a meal and all your pots are on the stove, you suddenly realize that you have no salt. You don't want to take all the pots off the stove, go down to your car, drive to the next super-market, buy salt, come back and start anew, so you decide to ask Mrs. Meier for salt. You go to her door and ring the door-bell. What do you say when she comes to the door?

We asked our informants to act out this scene and recorded what they said. We played the recording for them and had them comment on it: Whether they found it natural, whether this was the way one would express such a request in such a situation. If it was not natural, we repeated the recording until the informants were fully satisfied with it. We then made a double transcription of it: first in the official orthography of the respective language - from left to right or from right to left, according to the language - and, secondly, in a very simplified, non-ambitious, German-like transcription, which is intended to help the reader follow the original and identify the single words. The second transcription was written word by word under the first one. On a third line we wrote, with the help of the informants, a word-by-word translation. We added indications - as for instance

reference of pronouns, paraphrases of the meaning of grammatical endings, etc. - where they were necessary for the understanding of the grammatical construction. Only after this was completed, did we explain to our informants the purpose and the objective of our experiment.

The informants were mostly foreign students at the Freie Universitaet in Berlin. Most foreign students live in dormitories, so it was not too difficult to contact them. Even students who had come from homes which were not such modern apartments as described above could very well imagine themselves in a similar situation and had no difficulties in acting it out.

At this time our corpus contains recordings and transcriptions in the following languages:

> Afar, Amharic, Arabic (several dialects), Danish, Dari, English, Finnish, French, German, Greek, Gujarati, Hindi, Indonesian, Japanese, Jawajanish, Khana, Korean, Kurdic, Nepali, Norwegian, Pashtu, Persian, Polish, Portugese, Pular, Russian, Swedish, Serbo-Croatian, Singhalese, Spanish, Sri Lanka, Tigrinja and Turkish.

We were pleased to discover, while reading through the corpus, that the third line, which contains the word-by-word translation, was understandable for German readers, so that the constructions used could be compared. Looking through these translations we found that the recordings resemble each other in many ways.

Independently of the languages used, they all seem to contain elements from a given list. In order to show this, I have invented a German sentence ("model sentence") which includes a great number of these elements. This sentence has not been uttered in this form, but its elements can be found in the various recordings that we have in our corpus. It goes as follows:

> Guten Tag, Frau Meier, entschuldigen Sie bitte vielmals, aber ich wollte nur (ein)mal fragen, ob Sie mir nicht vielleicht ein bisschen Salz leihen koennten.

We will comment here only on the second part of the model sentence(1). The elements that we will deal with are surprisingly similar in the different recordings. In English, for example, the formulation could be:

> I just wanted to ask you whether you could perhaps lend me a little bit of salt.

In French, it could be:

Je voulais tout simplement vous demander, si vous ne pouviez pas me prêter un peu de sel.

This way of expressing the request which seems to be similar in many languages (if not all) would surprise us very much if we were Martians and not accustomed to the way human beings interact with each other. Martians might expect that the person who wanted salt would simply say: "Give me salt".

Let's look at the elements of the model sentence as Martians might do. (We will refer to the elements in the German version, sometimes giving the English and French equivalents in parentheses). They are:

(a) Modal verb: Instead of a question construction, the speaker uses a modal verb wollen, thereby expressing his intention of asking a question.-

(b) Past tense of modal verb: We find the form wollte in our corpus (and wanted instead of want; voulais instead of veux and so on). We will here consider this form of the verb as a past tense (2). Literally understood, wollte expresses not the speaker's present intention but what he had intended.-

(c) Performative verb: Instead of directly asking the question as a yes-no-question or as a wh-question, the speaker uses the performative verb fragen (ask, demander). This is unusual in every day speech. One rarely asks his partner: I ask you what the time is.(3) -

(d) Nur: The performative verb is preceded by the particle nur which expresses (like its equivalents in English and French, but and seulement or ne... que) that one element of the sentence is limited. Practically speaking, nur expresses in this particular context that the thing wanted is relatively small. -

(e) Mal: Mal belongs to the category of German "Abtoenungspartikeln" (4), and in this context it expresses the relative ease with which the desired action can be performed.-

(f) Indirect request: It's only at this point that the requested action is described; that is handled, not within a main clause, but within a subordinate one.-

(g) Negation: The indirect request contains the particle nicht (not, ne ... pas). One could get the impression from this that the speaker is asking that his request not be granted.-

(h) Vielleicht: The indirect request also contains a

vielleicht (perhaps, peut-être). Literally speaking, the speaker is not asking for salt, but is asking about the possibility of getting salt.-

(i) Modal verb koennen (pouvoir, can): Koennen is used in a similar way. The person asking for salt does not seem to be interested in actually getting it but only in knowing whether Mrs. Miller can give it to him. In reality, of course, what the speaker wants to know is not whether Mrs. Meier is able to give him some salt, but rather if she will. -

(j) Quantification of the salt: ein bisschen (a little, un peu) is - reallistically speaking - a ridiculous quantification: It does not matter, in our society, if one gives one or two teaspoonfuls of salt to one's neighbor. However, we find in most of our transcriptions that the small quantity of the requested salt is underlined: a teaspoon, a little bit, un tout petit peu. -

(k) Borrowing: It might surprise our Martian that Mrs. Meier is not asked to donate the teaspoonful of salt, but is only asked to lend it to the person. Strictly speaking, the person is lying when he states that he is only borrowing it. It would be ridiculous to come back the next day carrying a teaspoon of salt and say: "Thank you very much, Mrs. Meyer; here is your salt."-

(l) Mode of koennen: The modal verb koennen appears in the subjunctive II: koennten. In German this form is most often used in conditional subordinate clauses. Koennten lends an hypothetic nuance to the sentence. One is tempted to complete the construction with: ...wenn ich Sie darum bitten wuerde, ...if I would ask you to do so.

As previously pointed out, the texts of our corpus, acted out in many languages, show striking parallisms. As far as can be seen up to this point, none of the texts has elements which totally deviate from the general pattern shown in the model sentence (5). - For several reasons, this parallelism could not be predicted:

1) It is a well known fact that the language communities - and the societies in which the different languages are spoken - differ widely in the general pattern of their verbal behavior. This is experienced by anyone who travels to another country: many things which are not directly related to the grammatical structure of the language have to be learned again: how to greet people, how to react towards compliments,

how to be witty, how to lead a conversation, etc. It was therefore rather surprising to learn that this technique of request was relatively invariant, at least in the languages we worked with.

2) This technique seems not to be innate, in the sense that children can handle it from the beginning. We found that when children of the age of five or six asked for salt, they expressed their requests as our Martian would have expected earthlings to do. From our corpus:

Gib mir Salz! (girl, 5 years old),
Ich will Salz haben. (boy, 6 years old).

In a series of experiments with children of different ages, we will try to find regularities in the acquisition of this technique.

3) Even in German little variations in the setting of the experiment change the form of the request. The choice of the specific technique depends on various parameters of the situation, as, for instance, the intimacy of the participants and the formality of the situation. The social group to which the participants belong is also an important factor, though it has only an indirect influence. Probably the group to which the hearer belongs is more decisive than the one to which the speaker belongs.

4) We know that even in our society, the model-sentence-technique is not the only one. The choice of technique depends to a high degree on the value of the requested thing. We provisionally divide the techniques into three categories and, correspondingly, establish the following rules:

a) If you request an object (or an action) of little value, use the "minimising strategie" which consists of playing down the request.; the model sentence may serve as an example.

b) If you request something of intermediate value, use a "maximizing strategy"; utterances like: Koennten Sie mir einen Riesengefallen tun ...? (Could you do me a huge favor...?; Est-ce que vous pourriez me rendre un grand service...?) could be examples for the "maximizing strategy".

c) If you request something of very great value, use an "indirect strategy"; an example of this approach would be: I need 10.000 dollars, I could pay it back by next March.

Let's go back to our model sentence and try to interpret its strategy (6). Evidently the elements a) - 1) belong together and - being interrelated - should not be interpreted as isolated items. It is not

possible, however, to subsume them all under one unique denominator. We therefore propose a main explanation holding for the majority of the elements. Taking into account that this request is very complex, we will give additional explanations for two elements which serve different purposes.

We have to explain to our Martians that the following idea is the clue to understanding this form of request: Whoever utters a request must foresee the possibility of being refused by the one adressed. In order to save face the requesting person has to organize his request in a way such that a refusal does not automatically mean a conflict with the partner. One of the ways of avoiding this is to suggest to him that the request is not one that corresponds to a very strong and urgent need. Politeness requires that the speaker present his request as an unimportant one, even if it is not. There are several ways of realizing this strategy, the one used in the modal sentence are words like German nur, mal, English just, French tout simplement, and the past tense forms of the verbs. The idea behind the use of the past tense is that the speaker had the intention to make a request when he came but no longer has this intention (But see footnote 2).

The subjunctive II (l) serves the same purpose: it makes the request hypothetical. If the request is refused, the requester, officially, has the excuse: 'I am glad I did not actually make the request'. The request is made even more hypothetical by asking only if Mrs. Meier can grant it, not if she will grant it. If, as the requester had anticipated, the request is refused, he has still saved face.

But this way of speaking is not only a means of self-defense. Perhaps a more important function is to allow the person being asked to save face. The more serious a request is, the more it brings the person who has to refuse it into a difficult situation and the more it constitutes for him a "face-threatening-act" (Goffman). It is for this reason (that it makes it easier for the other to refuse it) that the request is uttered in the indirect form. Vielleicht, the element (h), has to be explained along the same line. One adds vielleicht to polite questions of the type: Koennten Sie mir vielleicht sagen, wieviel Uhr es ist? (Could you perhaps tell me the time?) in order to give the person asked the freedom to say no. Vielleicht permits the possibility of the person being asked not knowing the answer.

It has become routine for skilled speakers to use such forms. It is not polite to put pressure on the interlocutor. In short, this way of speaking reduces the pressure on the respondent: there is less pressure on the requested person and the speaker does not put himself so much at the other person's mercy.

Disturbing people by calling them to the door constitutes another possible face-threatening-act. It has to be played down. So our informants first apologized, then reassured Mrs. Meier that the request to come was to be of little significance (this is the second function of nur and mal). Only then did they make the request itself.

The thing that is asked for is also presented as being very small (ein bisschen, borrow). The social meaning of these elements is: 'Don't be afraid, I am not going to ask you for something that will be hard for you to fulfill'.

However, not all the elements of the model sentence seem to serve the purpose of making the possible refuse easier. At least two of them point in the opposite direction:

1. Emphasizing the smallness of a request may well have a reassuring effect on the person being asked, it will not, however, make it easier for him to refuse it. Refusing a small favor is in effect more unfriendly than would be the refusal of a large favor.

Three considerations must be made on these minimizing elements (like ein bisschen and leihen):
a) They comfort the partner and give him the feeling that he is not loosing very much. Beggars use formula of this type: Only one...!, as do children when they want to stay up to watch TV: Only five more minutes!
b) They make it difficult for the person asked to say no.
c) The little value of the requested thing, however, is not worth a serious conflict, even in the case of a refusal.

2. Nicht is also an element which makes it more difficult to say no. It is used in questions where Yes (in German: Doch) is the expected answer. Examples in English are tag-questions and all other negated yes-no-questions.

Finally, it may be interesting to bring up some of the questions that this experiment raises.

a) As pointed out previously, little children of five or six do not yet have this technique, as far as we can tell. We are planning to start some investigations to see if we can find regularities in the acquisition of these elements and strategies and if a relative chronology of the acquisition of these elements can be established.
b) The problem of the universality of pragmatic techniques of this kind has to be investigated further.
c) Where are the border lines that separate the different techniques ("minimizing technique" vs. "maximizing technique" vs. "indirect technique"), and on what factors does their choice depend?
d) The present experiment shows many unsolved linguistic problems in the semantics and usage of words such as nicht, vielleicht, nur, and in grammatical forms such as subjunctives and tenses. So far we do not know very much about their contribution to the pragmatic meaning of the utterances in which they occur.

FOOTNOTES

(1) On the interpretation of the somewhat mysterious aber (and its equivalents but and mais) see Weydt (in press a).

(2) I will not discuss the alternative to this interpretation of wanted, voulais, wollte, which would be to understand these verbs as forms of subjunctive in English and German. The French "imparfait" can be considered as a verb form which has the primary function of expressing background information, not of giving a temporal indication.

(3) A detailed work on when performative formulas are used and for what purpose has still to be done.

(4) For details of the definition of "Abtoenungspartikeln" see Weydt (1969); for the semantic description of mal see Weydt/Hentschel (in press).

(5) Of course, the scenes we have recorded so far don't cover the whole range of what is possible in the respective languages. Thus, our insights into the possibilities for uttering requests are rather limited. Sometimes, after the recording was done, we asked our informants if a certain form (negation, past tense of the verb wollen, etc.) was possible, but the answers to these questions are to be considered less reliable than the recordings. Nothing in our recordings, however, seems to be incompatible with the general pattern of the model sentence.

(6) Our explanation will use Goffman's approach as

shown in Goffman (1967) and (1974). Similar reflections can be found in Brown/Levinson (1978). An interpretation of the salt scene which is in some respects more detailed is found in Weydt (in press b).

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UNPREDICTABILITY IN CONVERSATIONAL DISCOURSE

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As linguists and other specialists investigate the structure of conversations, they tend to take the position that conversations are guided ultimately by general rules which, when known, will enable the investigator to predict the direction they take. To cite an exponent of this view, I quote from John Hinds (1978) who claims that

> '...topic changes are governed by principles of discourse organization that can be specified with a fair degree of accuracy, and that the organizing principles of discourse are similar, or identical, to the organizing principles of memory.'

Hinds goes on to discern three 'levels' of conversational organization: a universal one which derives from the assumption that human memory is patterned along similar lines, regardless of language or culture, a level of cultural control which reflects those specifics of topic change which recur in a given culture, and, finally, an idiosyncratic level which derives from the individual's particular personality, state of mind, etc. Much of the predictability of conversational direction presumably comes from knowing what information is stored in the memories of those who are conversing. Hinds adds that we must also consider the nature of particular conversations which may be oriented according to an object, a theme or an emotion. At the very least, we can agree with Hinds that a model of conversational analysis should not be limited to 'question/answer' pairs of utterances.

It is unlikely, however, that any significant degree of predictability can be realized, even in the responses to questions or comments. For example, how much information about theme, setting, actors, etc. would be needed to predict B's response to A in the following exchange (where B is A's husband and is serving A breakfast in bed):

A: Oh, you shouldn't have bothered!
B: Be quiet and don't disturb the cook!

To use Halliday's terms, the above exchange is coherent without being cohesive. To make the exchange cohesive, B would have to say something like: Oh, it's no bother.

If it ever should be perfected, a theory of discourse that would predict conversational directions would have a significant effect on foreign language teaching. It would reinforce the position of a number of foreign language teachers who believe that the conversations they find in their textbooks have some reality. Scenes like the ones at the hotel or the restaurant may actually take place and the same verbal exchanges will fit precisely. Even more significantly, a methodology to predict conversational direction would lead ultimately to total foreign language instruction by computer, with the software being capable of generating all the choices a human interactor might make.

While we must have great respect for the potential of computer programmers and designers to simulate natural discourse, I am not convinced that a model of language production based on a model of memory storage is relevant to the task to be confronted in learning a foreign language. As Francis Debyser (1980) puts it:

> 'language is a tool we use not so much for describing or representing the world but for changing it; not for exchanging feelings of empathy, but for saying what we like and what we don't like...'

Computers are far more skilfull than humans in exchanging information. They are designed not to be ambiguous or redundant and they never let emotion stand in the way of the cognitive content of their messages. When we humans try to act like computers, we subtract from our interactions the presentation of roles and we make dubious the strategic function of what we are saying to each other. Perhaps we will become more computer-like in the future, as computers become more human in their communicational functions. But for now, we can be satisfied to bring about improvements in teaching foreign languages as they are spoken by live human beings. A major advancement can be made if we simply allow the use of both native and target languages in the classroom to be more natural.

At present, the pragmatics of language functions in foreign language classrooms is anything but natural.

Foreign language teachers frequently step in and out of roles so that the learner is literally left speechless. Usually, the focus of conversations is on the so-called 'artifact' of the target language, i.e., its formal structure. The teacher often attempts to play two roles at the same time: (1) conversational partner engaged in some social use of language and (2) grammatical critic and judge. The result can be like what Elizabeth Leemann (1983) found in a conversational class of French for speakers of English where the teacher attempted to carry on all conversation in the target language. I cite a sample which may sound familiar to those who have been on either side of the instructional process:

> Student: *Je parti sans manger.
> Teacher: Je...?
> Student: *parti.
> Teacher: Je vais partir sans manger, parce que vous ne pouvez pas dire 'je partis.' Enfin, vous pouvez dire 'je partis,' mais ça, c'est un verbe qu'on n'a pas encore étudié.
> Student: Oh.
> Teacher: Bon, quelle est votre phrase?
> Student: Uh...
> Teacher: 'Je vais partir sans manger', n'est-ce pas?

In an effort to use only French, presumably to enhance the student's input of target language forms, the teacher directs attention away from the supposed goal of the conversation which was to discuss an action to be taken by the student (partir sans manger). By the time the teacher has 'corrected' the student's grammar, the student has completely lost the thread of discourse and has probably also become disinterested in continuing the conversation.

Research in pragmatics and discourse analysis has begun to be felt among foreign language teachers. Claire Kramsch (1981), for example, supplies her students with a number of phrases that may start conversations, express disagreement, signal topic changes, and so on). Different interactional games can be played with these one-liners, such as the following (from Kramsch 1981, p. 29):

> Students work in pairs. Each in turn is given a one-line starter and perhaps the situation for it. The second student

must pick up the situation as soon as the first has spoken.
e.g., Warum lässt du dir das Haar nicht schneiden?
('Why don't you get your hair cut?')

While the element of unpredictability is accounted for, the students must still 'play-act.' They are not engaging in real conversation about topics that interest them personally. If they happen to enjoy the particular game (and find some relevance in it to their own lives), they will play it well. Otherwise, the teacher will have to look for some other activity to interest them. What is missing is the drama of human interaction. Without personalization, students have no alternative but to fictionalize themselves. Exercises that center on verbal strategies without the personal involvement of the students are just as artifactual as those built on syntax and morphology.

What alternative do we have to organizing conversation in the classroom on artifactual bases? How do we create discourse in the target language that has all the properties of natural language use while, at the same time, underscoring a pedagogical theme? In the strategic interaction (SI) method we are developing at the University of Delaware, we are finding that discourse with a pedagogical function must be kept separate from target language discourse with social functions. Instruction must come in phases, with each phase stipulating a kind of interaction. These phases are called: (1) Rehearsal, (2) Performance, and (3) Debriefing. In the first phase (rehearsal), students engage in group interaction with the purpose of preparing an interaction. The language of discussion may be either the native or the target language, or even a combination of both. The second phase is the actual performance between representatives of separate groups. In the third phase (debriefing), the teacher leads the class in a discussion of the performance and answers any questions about its structure that the students might pose. Throughout the classhour, the teacher plays several roles: consultant (phase 1), observer (phase 2), and coach (phase 3). The focus of all class activity remains the performance by the students in the target language during phase 2.

The key element in SI is the scenario. The scenario has a time frame, a theme, a setting, and some degree of shared information. But most importantly, it is organized around two or more human actors who

find themselves interacting to accomplish goals. These goals may be idiosyncratic or they may be mutually shared. Not all scenarios are charged with high drama. Yet even a modicum of interactional energy can be generated from simple scenarios such as one involving people manoeuvring to find seats on a crowded bus. The ideal scenario is 'open-ended,' i.e., its outcome cannot be predicted. It must also allow the participants to 'play' themselves and not be forced to assume stances that they would not like to defend.

The typical way of presenting a scenario theme is to sketch out separate roles and supply different groups of students with information relevant to each role. For example:

> Role A (for a male): You have been invited to a party. A female acquaintance of yours requests a ride to the same party. She explains to you that her car is in the repair shop. However, at the end of the party, this female friend expresses some reluctance about letting you drive her home. What do you?
>
> Role B (for a female): Your car is in the repair shop and you have no way to get to a party. A male acquaintance agrees to drive you there in his car. At the party, you find that he has had much to drink and appears to be tipsy. You have reason to worry about his ability to drive. What will you say to him?

The students assigned each role have time to prepare, without knowing what the other person will say. They must anticipate what might be said and prepare some kind of retort. The outcome of the performance of the scenario is unpredictable since the students may decide to follow a number of different paths in their conversation. In our observation of students performing scenarios such as the above, we find that the emphasis shifts easily from the target language as the goal of instruction to solution of the interactional problem via the target language. Learning is enhanced because the students want to fit target language forms to strategies of personal interaction. Each scenario also has a nonverbal component which becomes part of the learning activity. Cultural systems come into play as filters through which the students' discourse must pass.

What is most clear is that the scenario allows us to present language within its natural, non-verbal

setting. The students come to understand--better than even some linguists--that language cannot be treated as a self-contained speech act. I sometimes wonder at how we linguists continue to transcribe live conversations from tapes which we then find incoherent. Perhaps a version of the scenario would be useful even to theoretical linguists attempting to develop theories of discourse.

Looking at the matter from either the theoretical or the applied side, the need for change is the same: we can no longer think of conversational exchange as self-contained, informational in intent, and governed by rules that have to do only with the form of language. We can no longer think of language as the output of individuals rather than the work of groups. To go back to the classroom, we can ask what the alternative is to a scenario-based procedure. The only answer is to continue to think we can capture language in contrived speech samples generated by fictional, unseen persons. On the other hand, if we reorient ourselves to think of language as a potential for communication, we can pose some new questions of interest to both theorist and pedagogue. For one: what constitutes complexity in human interaction and how is that complexity reflected in language use? Another question: What role do nonverbals play in situations where language is lacking? Certainly the unpredictability of conversations is no hindrance to the seeking of answers to such questions and many others like them.

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DIFFERENT APPROACHES TO THE DESCRIPTION OF CASUAL CONVERSATION

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Casual conversation is perhaps one of the least ritualized and obviously structured registers in discourse. The reason for this is the continual change in the generic situation of the interlocuters. Burton writes that discourse in the classroom is a very different matter. Here, all parties are agreed on the type of transaction that the time will be spent in and that the teacher is in control of all the appropriate reciprocal Acts and Moves that both she and the pupils will be employing, to assist in the attainment of the teacher's end (Burton 1980:141). In casual conversation, the functional relationships are generalizable to a certain extent, however, overly simplified generalizations often obscure rather than clarify the description of this complex register. For example, the 'peer to peer' description of two interlocuters' personal relationship does not come close to describing explicitly the continually fluctuating control or power shifts that are at work in phatic interchange. Similarly, the functional relationship is not merely a matter of 'talking just for the sake of talking'. At times one participant may be persuading the other to agree with him, at other times teaching or informing. To capture such continuous dynamism in a linguistic description of these discourse types is a tremendous challenge.

It is from my work on casual conversation that I have had to face this challenge. At the moment my corpus involves six texts produced by pairs of students of the age of six or seven, and two additional texts produced by adult students between the ages of twenty and thirty. I have described these eight texts using phasal analysis, a descriptive strategy that Michael Gregory and I have developed in our work on Communication Linguistics over the past few years. It is in trying to meet this descriptive challenge that I have become familiar with two other approaches that are being used to describe casual conversation. One, using schematic structures and formulae, has been developed by Ventola in Australia, following the model set forth by Hasan in 1977 and currently being developed by Martin (see Hasan 1977; Martin 1982; Ventola 1979). The other involves a modification that Burton has made of Sinclair and Coulthard's discourse exchange structure analysis of classroom talk (see Burton, 1980; Sinclair and Coulthard, 1975).

Ventola identifies seven schematic elements of structure that she uses to describe the sequence of casual conversation: the Greeting, Address, Identification, Approach, Centering, Leave-taking and Goodbye (1979:271-274). She adds features of option-

ality and recursiveness to these elements based on social distance and length of verbal interchange, and comes up with four formulae that are to account for all possible structures and sequences of structures: for short, friendly conversations; long friendly conversations; short and long conversations between strangers. Ventola then uses these structures and formulae to describe four texts which vary from one minute in length to fifteen minutes.

Such schematization and formulization possibilities seem very interesting, particularly in the description of well formed service encounters which Ventola has been working on more recently and where metafunctional selections are relatively predictable. However, I have serious reservations as to the usefulness of this procedure when the register being described is as variable and hence, unpredictable, as casual conversation. Almost the whole of Ventola's longest text is a series of Approaches. These are distinguished from one another according to topic, and the similarity or dissimilarity of topic from one Approach to the next. Inspite of the fact that Ventola is coming from a tri-functional view of language (see Halliday 1973), it seems to me that too much weight is being carried by the experiential selections, and that a possible non-isomorphism between interpersonal and textual selections might change her boundary results considerably. In addition to this problem, I feel that the Approach and Centering structures, which seem the most relevant to casual conversation, are not fully appropriate, nor explicit enough to capture the dynamic aspects of this activity.

In the description of the two adult, ten minute conversations in my corpus, Ventola's schematic structures proved only minimally useful. One text included a Greeting, Address and numerous Approaches, the other only numerous Approaches with an embedded Identification. In the description of the six children's texts the structures and formulae were not at all relevant. However, if a more explicit tri-functional selection of schematic structures could be developed, it would be very interesting to see at what point in the children's acquisition of language communicative skills were such structures used.

Although schematic structures are derived from 'beginning, middle and end' characteristics, according to Martin (1982:5), which reflect a concern with the dynamic aspects of language; such schematization seems to imply synoptic internal characteristics. Yet, when some of these structures are, in Ventola's sample, over one hundred utterances in length, the likelihood of such stability becomes doubtful, and possibly misrepresentative. In addition to this, a descriptive apparatus that explicitizes structures seems to impose a 'step by step' formulization of the situation. In ritualized encounters this seems appropriate, in casual encounters it doesn't.

Burton's descriptive approach captures some of the dynamism of turntaking in exchange structure, but I feel that it too bypasses some crucial codal realizatory detail in the process. In 1980, Burton modified the descriptive apparatus that Sinclair and

Coulthard had first developed in 1975, as they sought a model of description for teacher-pupil interchange in the classroom, in order to apply it to non-formal conversational data. Originally Sinclair and Coulthard had set up a hierarchy of units in their discourse stratum which included, from the top: Lesson, Transaction, Exchange, Move and Act (see Sinclair and Coulthard 1975: 24-30; Burton 1980:124-138), and sub-categories of each. In modifying this apparatus to deal with the register of casual conversation, Burton merely dropped a few of the sub-categories at various ranks, added others and redefined others (Burton 1980: 154-158).

In such analyses, lexical and mood criteria seem to bear the brunt of the responsibility in decisions as to what Acts are being realized in what Moves, and so on up the rank-scale. Again, that such an arbitrary and limited set of criteria is used to describe such a complex register, I feel is inappropriate. Codal information about process types, modality selections, theme marking and cohesion, to name but a few matters, must be taken into account before the dynamic complexities of casual conversation have any hope of being exhaustively analyzed. Also, I have doubts, as I pointed out last year in my Lacus paper (Malcolm 1982a), whether a seemingly synoptically oriented discourse stratum, hierarchically arranged, is the best model with which to describe the dynamism of verbal communication.

In Communication Linguistics we have two different types of abstractions to capture the dynamic as well as the synoptic characteristics of language. In the planes of experience: Situation, Discourse and Manifestation, language is seen as dynamic, all progresses linearly from then to now. No hierarchically arranged rank-scale imposes 'Chinese box'-like limitations on the data being described. However, among the synoptically oriented codal realizatory strata: Semology, Morphosyntax and Phonology or Graphology, each stratum is organized in terms of rank-scales (see Gregory 1982, Malcolm 1982a&b). At this point we are calling our descriptive procedure, phasal analysis.

Phase is the key concept for our discourse plane. By giving primacy to the concept phase we are acknowledging that to us, language is first and foremost activity. It is a particular type of intentionally communicative verbal behaviour which is manifested in a situation. In phasal analysis one begins by making as complete a description as possible of the codal realizations made semologically, morphosyntactically and phonologically. Once a codal analysis has been made, the discourse is divided into phases and transitions. 'Phases characterize those stretches of text where there is a significant measure of consistency in what has been selected from the code, ideationally, interpersonally and textually' (Gregory and Malcolm 1981). In other words, 'It is the dynamic instantiation of registerial choices in a particular text' (ibid). Transitions in and out of phases are indicated by changes in choice from one or more functional components, before a new phasal consistency is established. Phases show how language flows in a continuum, but one that is 'packaged' to ensure encoding and

decoding ease (Beekman, Callow & Kopesec 1981:14). Transitions capture the potential overlap between phasal packages which operate as links in the conversational chain.

In using phasal analysis in the description of my corpus of eight texts, it has become apparent that how adult conversation differs from that of children is not so much in the codal realization, but in the way the discourse interfaces with the situation. Children of six seem to have some grasp of all the codal resources available to, and realized by the adults. However, their language is very different, primarily because the codal resources that they use, depend on the experiential and interpersonal relationships they have in the particular situation. And the innovations the adults make codally reflect a wider cultural experience of language in use, than the children have. To exemplify these matters I will refer directly to the texts within my corpus.

The speech community context of both the adults and children was similar (see Gregory and Malcolm 1981), although there was a disparity between their ages, which has already been mentioned. Otherwise, both groups were residents of middle class families in Toronto during the latter part of the seventies and the early eighties. The generic situation of the two groups had a great deal in common too, in a generalized sense anyway. In both cases the functional relationship of the interlocuters was merely 'to talk' to one another. Their personal relationship was 'peer to peer'. As far as the medium relationship is concerned, both spoke spontaneously in a face to face situation. Experientially, their options, at least according to their setting, were potentially similar. In both cases the recordings were made in school settings; the children's in the school nurse's office, the adult's in my office at York University. However, earlier I mentioned that this apparent generalized consistency is rather a simplified and inaccurate way of looking at generic situations that involve casual discourse. In casual conversation all the interlocuter relationships are open continually to change. And when phasal analysis is not used to indicate all shifts in the discourse, it is still a gross misrepresentation to identify, let's say, the functional relationship in the generic situation of the adults with that of the children. Adults are worlds apart from children in terms of their linguistic processing of social experience.

In two cases the children did not even respond to the functional request 'to talk to each other', and there was a minimum of shared interchange as one of the interactants either responded with silence or non-verbal laughter. The adults, on the other hand, not only talked, but used their response to this functional demand to fulfill another socially accepted and even expected function in this culture, that of 'getting to know one another' through language; and by doing this reducing the non-minimal social distance to minimal distance (Ventola 1979:275). They met this social obligation by developing their context of shared experience. They did this by informing, eliciting, supporting, challenging, commenting and so on (see Burton's Acts 1980:157). Consequently their phases are long (averaging between twenty and

forty utterances), varied in process types etcetera, complex in the frequent use of alpha-beta clause complexes, and secondary as well as primary predications.

Children have learned how to manipulate these exchange structures, but do not seem comfortable using them in all situations. When the children in my texts were given something to do ('build using Lego') and their conversation had this area of commonality, they did utilize a variety of exchange structures that made for much longer and more complicated phases, than before the Lego experiential function was specified and they had nothing around which to 'organize' their experience. Before the Lego activity began, the phases in their interchange were very short, averaging between five and ten utterances per phase, and many of these phases were extremely one-sided as far as a mutual control over the functional selections was concerned. Supporting and challenging moves in these early phases were almost non-existant. In some cases phases were just opened, acknowledged and then closed. Often the one who initiated the phases and opened the exchange was unable to support, challenge and comment on his initiations. Thus, such Moves were realized less frequently.

Experiential selections are another feature that show how important the social experience is to language acquisition. The children in almost all cases initiated their conversations with experiential selections from their immediate environment. In my corpus this meant talking about a tape recorder, an eye chart, a mirror. These ideational selections seemed to offer the greatest potential for initiating shared interchange; both participants should be able to talk about what they could see. When a child did go into some past reverie, the other seemed to have difficulty making those necessary probing questions or pertinent comments that might have drawn him into the interchange. Rather they let the matter drop; the phase ended having barely begun.

Adults, on the other hand, seem to have the cultural and linguistic experience to allow them access to almost any experiential selection. In one text, one participant had no knowledge of sports. However, she knew someone who had, and could use what this prior interlocuter had shared with her, to gain access into a present conversation that focused ideationally on sports, at least, for a few phases. The adults also knew how to take an area of common experience (grade thirteen) develop it in a way that would allow first one interlocuter to give her experience of it and then the next. They could also extend a conversation about summer jobs naturally into one about job exploitation and sexual harrassment. It is social experience and familiarity with the linguistic processing of experience that the children lack, as well as confidence in using the full range of exchange resources when an experiential focus is not given. They have difficulty selecting messages from their referential realms and realizing these in discourse plots.

They also lack linguistic experience with the use of transitions. Often they jump from topic to topic as they search for an experience relationship to share, with little attempt to make

one experiential selection flow into the next. The only transitions that they employ to any great extent are the formulaic openings 'I wonder if' or 'You know what? What?'. The adults are comparative masters of the transition and know when one needs to be used. They do not use such formulaic introductory transitions, rather they do use 'filler phases'(which are used for purposes of phatic communion elsewhere) (Malcolm 1982b) where, if there is a lapse in conversation they can throw in a 'safe' topic such as the weather and by doing so bring the conversation back to a neutral point where it can be developed in a new direction if the one previously established was entering the socially prescribed 'off limits' zone.

These are but a few of the differences between adult casual conversation and that of children which phasal analysis makes apparent. For the reasons I have outlined, I do not feel that either schematic structural approaches, or discourse exchange approaches can appropriately and explicitly describe such a continuously fluctuating, and hence, unpredictable register as casual conversation. I do feel that phasal analysis, as it captures micro-registerial dynamism, has the best chance of showing what inventive, and indeed, creative creatures we are in our casual conversations.

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THE USE OF THE PASSIVE IN SIERRA POPOLUCA DISCOURSE

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0. Introduction.

Sierra Popoluca[1] makes liberal use of passives in narrative discourse. In several texts comprising about 4,500 clauses, 10% of the verbs were in passive form. A comparable amount of English narrative shows only 4.3% of the verbs in the passive.[2] This paper attempts to address the question of why passives should be so frequent in SP discourse. First, I shall describe the formation of passive verbs, then catalogue the functions that they carry out and the reasons for their use in preference to active forms.

1. Formation of passives.

SP passives are formed by adding -ta· to transitive verb stems:

(1a) ku't 'to eat something'
(1b) i-ku't-pa (3-eat-incompletive) 'he eats it'
(1c) ku't-ta·-p[3] (3-eat-passive-incom.) 'it is eaten'

The person prefixes that accompany passive verbs are those that mark object with active transitive verbs or subject with intransitive verbs. SP (a language that has ergative features) has two sets of person prefixes that accompany both verbs and nouns. Set I marks subject with intransitive verbs and with passive verbs, object with active transitive verbs, and identity with nouns. Set II marks subject with active transitive verbs and possessor with nouns.

Set I	Set II	
ta-	tan-	1 dual[4]
a-	an-	1
mi-	iñ-	2
Ø-	i-	3

Illustrations of Set I are:

(2) ta-wit^{y}-pa (1 dual-walk-incom.) 'you and I walk'
(3) mi-ko'ts-ta·-p (2-hit-pass.-incom.) 'you are hit'
(4) apɨ·xiñ (1-man) 'I am a man'
(5) Ø-nɨk-pa (3-go-incom.) 'he goes'

Illustrations of Set II are:

(6) tan-toy-pa (1 dual-love-incom.) 'you and I love him'
(7) an-tɨk (1-house) 'my house'
(8) iñ-huy-pa (2-buy-incom.) 'you buy it'
(9) i-kawaj (3-horse) 'his horse'

However, in certain verb phrases, both intransitive and passive main verbs use Set II markers (where Set I would be expected), e.g.

(10) wɨ'a-p i-wit^{y} (able-incom. 3-walk) 'he is able

to walk'

(11) nɨk-pa i-tʸoy-ta· (go-incom. 3-love-passive)
'going he is loved'

2. Uses of the passive.

We now consider uses of the passive which give rise to the relative frequency of passives in discourse.

2.1. To avoid or resolve ambiguity. In SP transitive clauses with two participants, it is frequently impossible to determine which is subject and which is object. This is so because there are no case markers to indicate subject or object role, nor is there fixed word order. If the meaning is obvious from the nature of the participants or of the context, there is no problem. For example:

(12) i-mats-pa tajpi tʸaka (3-grab-incom. hawk chick)
'the hawk grabs the chick'

This sentence can be cast in any possible order and the meaning is always the same, since chicks do not grab hawks.

But a sentence like:

(13) i-ko'ts-pa pe·toj xiwan (3-hit-incom. Peter John)

is ambiguous. It can be interpreted either as 'Peter hits John' or as 'John hits Peter'. It can also be cast in any order.[5] This ambiguity may be resolved by the use of a passive (if it is not obvious from the context). A common way of resolving the ambiguity is by a two clause construction:

(14) ko'ts-ta· xiwan (3-hit-passive-com. John) 'John was hit'
ko'ts-o'y pe·toj (3-hit-intransitivizer Peter)
'Peter hit' or 'Peter did the hitting'

In order to avoid possible ambiguity, SP speakers resort to passive constructions. In #18 of sample text 3.1, it would be possible to say:

(15) agi i-tʸoy-pa jesɨk je'm pɨ·xiñ (very 3-love-incom. then the man)

but it could be interpreted as 'the man loves her (the ghost-girl)' or 'the man loves them (the ghost people)' or 'she loves the man' or 'they love the man'. To avoid this possible ambiguity a passive is used instead.[6]

An additional illustration is found in sample text 3.2.

(16) iga dʸa i-aŋkeja'y je'm chi·ñu, akya'gɨytʸa· juñchuts tejajkɨ'ɨm (because no 3-reveal-com. the honey, push-passive-com. juñchuts cliff-place) 'Because he didn't reveal the honey, the Junchuts was pushed over the cliff.'

It would be possible to use a transitive here:

(17) i-akya'gɨ'yum (3-push-com.) 'he pushed him'

but at this crucial point in the story a passive is selected so there is no ambiguity about who is shoved over the cliff.

2.2. To keep in focus the principal participant in the discourse. In sample text 3.1, the sentences of the setting (1-5) have no transitive verbs, the sentences of the complication (6-7) do contain transitives, but the one in #6 ini'itʸ 'he/she has it' does not affect the situation (i.e. it does not matter in the story

whether his wife has another man or another man has his wife). In #7 there is a transitive verb, but the second participant is an abstract object (something like "the information") and can only be interpreted as 'the man knows it', not 'it knows the man'. Therefore, through this part of the story, even without passives, the man, whom the story is about, is kept in focus.

In sentence #12, a second participant is introduced into the narrative: the ghost girl. Beginning with #14 and going on through #19, there is a series of passive verbs (8) that describe the life the man had with the ghost people. These serve to keep the man in focus and to describe his experiences.

Sample text 3.3. is from an account of the Mexican revolution. The narrator begins with a passive and uses two other passives early in the account to indicate what happened to him. Since the narrative is about what happened to the person relating the account, he uses passives to keep the focus on himself during the story.

2.3. A third purpose for using passives seems to be to put into prominence a participant who has hitherto been playing a subordinate role in the discourse, or who has not been mentioned at all. In sample text 3.4, a woman (who had turned into a cow) is captured, and the priest is notified:

(18) jesɨgam akjo·do'ŋa-ta· pa·nij (then notify-passive-com. priest) 'then the priest was notified'

Up to this point in the story, the priest has not been mentioned, but now he takes a prominent role; he is the one who decides the woman's punishment.

SP also has a flood story. In it, Noah, after getting out of his canoe, built a fire to cook some of the dead animals. But God had told him not to touch anything. God came to see what Noah was doing and was displeased. He took the embers of Noah's fire and scattered them about. The embers became the small forest animals.

(19) pɨgay-tʸa·-p je'm jipsaŋ akwi·pwi'ibɨ'yay-tʸa· (3-take from him-passive-incom the embers 3-scatter for him-passive-com.) 'the embers are taken from him and scattered about for him'

The embers are suddenly in focus since they become the small animals of the forest as God scatters them about.

2.4. A fourth reason for the extensive use of passives seems to be to emphasize the result of action, rather than the doer of the action. Sample text 3.5 is a selection from an account of a fight in another village. In the narration, neither man involved is named. The only identifying characteristics are that one man had been threatening the other, and one had a fiddle that he was going to play at a town dance. It is not completely clear to me (though it might be to a native speaker) which one got the worst of it in the fight.[7]

However, as the actual fight begins, the narrator suddenly resorts to passives. Apparently, what is now of interest is what happened in the fight (i.e. what damage was done), not who is involved. In the 15 sentences of the text sample, there are 9

passives. These, in general, show the results of the fight as it progresses. These 9 passive verbs follow one after another almost without interruption by other verb forms. The particular nouns that are the subjects of the passives appear to be unimportant in themselves. It is not a matter of focus here, but rather an emphasis upon the results of action as a way of showing what happened. Notice the examples:

(20) tse'ŋay-tʸa-tɨ'p iyɨ'm (3-stab for him-passive-frustrative 3-here) 'his here (narrator points where) was stabbed in vain'
(21) toba'yay-tʸa· i-kuchiyu (see footnote 7)
(22) moj i-cheŋ-ta· (begin-comp 3-stab-passive) 'he began to be stabbed'
(23) tse'ŋay-tʸa· i-wiñpak (3-stab for him-passive-comp 3-face) 'his face was stabbed'
(24) kutseŋtse'ŋay-tʸa· (3-stab all over-passive-comp) 'he was stabbed all over'
(25) tse'ŋay-tʸa· i-po'kpak (3-stab for him-passive-comp 3-ribs) 'his ribs were stabbed'
(26) kutsɨgay-tʸa· (3-release-passive-comp) 'he was released'
(27) nanɨgay-tʸa· juktɨ (3-take for him-passive-comp light) 'a light was taken to him'

These examples appear to show a definite emphasis on the results of action. The agent is not indicated, in fact, in SP passive clauses, the agent cannot be indicated. There is a sense in which this point encompasses the previous three. SP tends to emphasize the goal (or result) of action rather than the agent.[8]

2.5. A final use of the passive that deserves mention is that found with verbs of saying. In the texts studied, nearly 40% of passive verbs are instances of the verb nɨ'ma'y 'to say to':

(28) nɨ'maytʸa· pe·toj 'Peter is said to'

I believe the frequent occurrence of this form tends to confirm our general conclusion that the goal of an action is more important to SP discourse than the agent.[9]

3. Sample texts. We now present five sample texts. The first is a complete story, the others are selections of narrations that serve to illustrate the points made above. First the SP sentence is presented, then a word (or where relevant, morpheme) by word translation follows. In 3.6. a free translation of each text is given. SP passive verbs are underlined.

3.1. The man and the ghost girl. 1. tum pɨ·xiñ jesɨk ka'amɨ'y jɨmño·m. (a man then cornfield-poss bush-in) 2. jemɨgam moŋpa ika·mjo·m. (there 3-sleep-incom 3-cornfield-in) 3. miñpa itʸɨkmɨ kada domingo. (3-come-incom 3-home every Sunday) 4. nɨmpa je'm iyo·mo, "mimiñum, itʸgakum i'ña·ñi, nɨkga·kɨ iŋka·mjo·m." (3-say-incom 3-woman, "2-come-comp, 3-be=again-comp 2-tortilla, go-again-imp 2-cornfield-in") 5. jesɨk nɨkpa je'm pɨ·xiñ eybɨktʸim ika·mjo·m. (then 3-go-incom the man again 3-cornfield-in) 6. je

dʸa ijo·doŋ iga je'm iyo·mo tuŋgagam pɨ·xiñ ini'itʸ. (he no 3-knowledge that the 3-woman another man 3-have-comp) 7. jesɨk ijo·do'ŋawom, je jo'yñe. (then 3-find out-comp, he 3-be angry-cont-comp) 8. nɨmpa, "sɨ'ɨp dʸam ase·tpa antɨkmɨ, yɨ'm a'itʸpa aŋka·m-jo·m." (3-say-incom, "now no 1-return-incom 1-home, here 1-be-incom 1-cornfield-in") 9. pero je·m itʸtʸim nɨ ju·tʸ nɨkpa ipɨk iga i'uk-pa. (but there 3-be-comp-also water where go-incom-3-get that 3-drink-incom) 10. kada nɨkpa ixpa chiŋnenɨ·m. (each-time 3-go-incom 3-see-incom bathe-cont-action focus) 11. nɨmpa, "ɨch me'iga a'ñixpa i·, je'am ampɨkpa." (3-say-incom,"I if 1-see-incom who, that-one 3-take-incom" 12. mojum ikunu·m asta iktsɨ'y tum po·p-wo·ñi. (begin-comp-3-stalk until 3-come upon-comp a white-girl) 13. imatspa, nɨmpa, "odoy ama·tsɨ, mich agi mipa'ak." (3-grab-incom 3-say-incom, "don't 1-grab-imper, you very 2-salty") 14. jesɨk nɨ'maytʸa·p, "chi·nɨ." (then 3-say to-passive-incom, "bathe-imp") 15. je'm pɨ·xiñ nɨ'maytʸa·p. (the man 3-says to-passive-incom) 16. mojum ikchiŋta·, sɨ'ɨba iñe'mkipsta· iña·ka asta jesɨk dʸam pa'ak. (begin-comp-3-bathe-passive, be-incom-3-lick-test-passive 3-skin until then no salty) 17. nanɨktawom je'm pɨxiñ asta ju·tʸ itʸ je'm maktiwo·ñi ija·tuŋ. (3-take-passive-comp the man until where 3-be-comp the ghost-girl 3-father) 18. agi toytʸa·p jesɨk je'm pɨ·xiñ. (very 3-love-passive-incom then the man) 19. pe·ytʸa.p tsayyukmɨ jɨmño·m. (3-swing-passive-incom vine-upon bush-in) 20. nahoksta·ptʸim je'm ika·ma. (3-hoe-passive-incom-also the 3-cornfield) 21. jesɨk nu'k wɨsna semana nɨkum ime'ts je'm iyo·mo, wejpa ika·mjo·m. (then 3-arrive-comp two week go-comp-3-search the 3-woman, 3-weep-incom 3-cornfield-in) 22. nɨmpa, "ju·tʸ i'ñɨŋ maŋwɨdʸa·ya?" (3-say-incom, "where 2-go-to-comp 2-1-husband?" 23. je imatoŋne. (he 3-hear-cont-comp) 24. nɨmpa je'm maktiyo·mo, "nɨkɨ a'amɨ pe'm iñyo·mo, agi wejpa, pero dʸam iññu'uspa." (3-say-incom the 3-ghost-woman, "go-imp look-imp that 2-woman, very 3-weep-incom, but no 2-hug-incom") 25. pero jesɨgam je'm iñunta-yo·mo ju'umɨnam i'ix agi wejpa, nɨmpa, "miñɨ maŋwɨdʸa·ya!" (but then the 3-real-woman far-still 3-see-comp very 3-weep-incom, 3-say-incom, "come 2-1-husband!") 26. iŋnu'usa'yum iwɨdʸa·ya. (3-embrace-comp 3-husband) 27. nɨmpa pɨ·xiñ, "odoy anu'usɨ!" (3-say-incom man, "don't 1-hug-imp!") 28. "tʸi'iga?" nɨmpa, "si ɨch agi mantoypa." ("why?" 3-say-incom, "if I very 3-love-incom") 28. jesɨgam se·ttɨ'pnam ju·tʸ itʸ je'm imaktiwo·ñi, dʸam ipa't. (then 3-return-frustrative-still where 3-be-comp the 3-ghost-girl, no 3-find-comp) 29. mojum se·tʸi itʸɨkmɨ. (begin-comp-3-return 3-home) 30. dʸam ja'y, jawaŋtʸi ikka. (no 3-last-comp, fever 3-kill-comp)

3.2. The Junchuts finds honey. 1. juñchuts agi ipa'tpa chi·ñu. (Junchuts very 3-find-incom honey) 2. jesɨk dʸa jucha ipa'tpa, ipa'dayñe imu·tɨ. (then no really 3-find-incom, 3-find for it-cont-comp 3-well) 3. jesɨk je'm i'ɨ·mɨ i'ix iga ipa'tpa chi·ñu. (then the 3-brother-in-law 3-see-comp that 3-find-incom honey) 4. iñɨ'ma'ypa iga "nɨgiñ tamme'ts." (3-say to-incom that "go-obligatory 1-dual-look for") 5. pero je dʸa iŋkeja'ypa je'm mu·tɨ. (but he no 3-reveal-incom the well) 6. jesɨk ininɨkum je'm i'ɨ·mɨ iŋkeja'ypa we'eñɨk, iñɨ'ma'ypa, "yɨ'bam chi·ñu." (then 3-take-comp

the 3-brother-in-law 3-reveal-incom wasps, 3-say to-incom, "this honey") 7. jesɨk je'etʸim i'ix je'm i'ɨ·mɨ, ininɨk ju·tʸ dʸa wɨ·ko·m. (then the-same 3-see-comp the 3-brother-in-law, 3-take-comp where no good-place) 8. jesɨk iga dʸa iŋkeja'y je'm chi·ñu, akya'gɨytʸa· juñchuts tejajkɨ'ɨm. (then because no 3-reveal-incom the honey, 3-push-passive-comp Junchuts cliff-place).

3.3. A selection of an account of the Mexican revolution.
1. aktsukumta·, amoŋpa idʸɨk tum kardonjo·m. (1-awaken-passive-comp, 1-sleep-incom-reversive a maguey-in) 2. jesɨgam tsu'ukɨ'ɨm ajɨ'yaytʸa·, nɨmpa, "yu·sɨ!" (then dark 1-speak to-passive-comp, 3-say-incom, "wake up!") 3. jesɨk ɨch ayusne, mojum anɨki, pero ɨch dʸa anjo·doŋ ju·tʸ ananɨkta·p. (then I 1-wake up-cont-comp, begin-comp-1-go, but I no 1-knowledge where 1-take-passive-incom) 4. nɨmpa je'm pɨ·xiñ, "tanɨkpa je'exɨk." (3-say-incom the man, "1 dual-go-incom over-there.") 5. jesɨk ɨch aput tuŋjo·m, je·m miñpa wa·tʸi soldajo. (then I 1-go out-comp trail-in, there 3-come-incom many soldiers.

3.4. A selection from "The woman who turned into a cow." 1. jesɨk je'm su'yoypa'ap ixuyum ikwɨstɨk. (then the ropers 3-lasso-comp both) 2. je'm toro je ijak je'm suga. (the bull he 3-break-comp the rope) 3.je nɨk. (he 3-go-comp) 4. jesɨk namiñtʸa·. (then 3-bring-passive-comp) 5. ichakne idʸɨk ipuktu·ku je'm yo·mo. (3-leave-cont-comp-reversive 3-clothing the woman) 6. jesɨgam jedaytʸa· iki·ñi, jemum tse'naytʸa·. (then 3-puncture-passive-comp 3-nose, there 3-tie-passive-comp) 7. jesɨk akjo·do'ŋata· pa·nij iga je'm yo·mo putne iga ba·ka. (then 3-inform-passive-comp priest that the woman 3-go out-cont-comp that cow) 8. miñ pa·nij, oy ima·sanwat. (3-come-comp priest, come and go-comp-3-bless) 9. jesɨgam kunasoyñɨ·m iga tɨ'ŋaytʸa'iñ kɨ·pi iga no'oketta·p je'm ba·ka. (then 3-tell-action focus that chop-passive-obligatory firewood that 3-burn down-passive-incom the cow)

3.5. Selection from the story of a fight. 1. jesɨgam nɨmpa iga "nu'kum o·ra iga manakka'aba." (then 3-say-incom that "3-arrive-comp hour that 2-1-kill-incom") 2. jesɨk je itʸopputpa ikuchiyu. (then he 3-take out-incom 3-knife) 3. jesɨk je'm ini'itʸwɨ'ip kowa tseŋtatɨ'p. (then the one-who-had fiddle 3-stab-passive-frustrative) 4. jesɨk tse'ŋaytʸatɨ'p iyɨ'm, jakne ibolsa. (then 3-stab-passive-frustrative 3-here, 3-cut-cont-comp 3-pocket) 5. jesɨgam poy. (then 3-run-comp) 6. jesɨk ikɨ'ɨjuŋkot je'm kowa, ichi'um i'o·mi. (then 3-deliver-comp the fiddle, 3-give-comp 3-owner) 7. jesɨgam miñum je'm tuŋgak pɨ·xiñ, toba'yaytʸa· ikuchiyu. (then 3-come-comp the another man, 3-take for him for him-passive-comp 3-knife) 8. jesɨk matsaytʸa· ikɨ. (then 3-grab-passive-comp 3-hand) 9. jesɨk moj ichenta·. (then begin-comp-3-stab-passive) 10. tse'ŋaytʸa· iwiñpak. (3-stab-passive-comp 3-face) 11. jesɨk agi aŋmo'oga·p iga kutseŋtse'ŋaytʸa· (then very 3-struggle-incom that 3-stab completely-passive-comp) 12. tse'ŋaytʸa· ipo'kpak. (3-stab-passive-comp 3-ribs) 13. jesɨgam kutsɨgaytʸa·. (then 3-release-passive-comp) 14. jesɨk po'yaŋ-tsukum. (then 3-run-begin-comp) 15. jesɨk dʸam ju'umɨ nɨk, jemum aktɨŋ. (then no far 3-go-comp, there 3-fall-comp) 16. jesɨgam

nanɨgaytʸa· jukti, ja'ya'ŋam nɨ'ɨpiñ tu'mne ju·tʸ aktɨŋ. (then 3-take-passive-comp light, much blood 3-gather-cont-comp where 3-fall-comp).

3.6. Translation of the sample texts.

3.6.1. The man and the ghost girl. A man has a cornfield in the bush. He usually sleeps in his cornfield and comes home every Sunday. His wife says, "So you have come, here are your tortillas, now go back to your cornfield." Then the man would go back to his cornfield again. He did not know that his wife had another man. When he found out, he was angry. He said to himself, "Now I'm not going back home, I'll stay here in my cornfield. There was water nearby where he went to get it for drinking. Each time he went, he saw that someone had been bathing. He said, "If I see who it is, I will marry her." He began to stalk her and came across a white girl, he caught her. She said, "Don't grab me, you are very salty. She said, "Bathe!"

So she began to bathe the man and to test his skin by licking it until he was no longer salty. Then the man was taken to the to the ghost girl's father. They loved the man very much, they swung him on vines in the forest, they helped him hoe his cornfield.

When two weeks had passed, his wife went to look for him, she wept in the cornfield. She said, "Where have you gone, my husband?" He heard her.

His ghost wife said, "Go and see your wife, she is weeping very much, but don't hug her."

But his real wife saw him and shouted, "Come here, my husband!" She embraced him. He said, "Don't hug me!" "Why not," she said, "I love you very much."

Then he tried to return to where his ghost girl was, but he couldn't the place. So he returned home. But he didn't live long, fever killed him.

3.6.2. The Junchuts finds honey. The Junchuts finds a lot of honey. Actually, he didn't find a bee hive, he found the honey well [where the bees get their honey]. Then his brother-in-law saw that he had found honey, he said to him, "Let' go look for some."

But he didn't reveal the honey-well, he took his brother-in-law and showed him wasps, and said to him, "Here's the honey." Then his brother-in-law took him to a bad place, and because he didn't show him the honey-well, the Junchuts was pushed over the cliff.

3.6.3. The Mexican revolution. I was awakened, I had been sleeping under some maguey plants. It was still dark when I was spoken to, "Get up!" he said. Then I got up and began to go, but I did not know where I was being taken. The man said, "We are going over there." When I came out on the trail, a lot of soldiers were coming.

3.6.4. The woman who turned into a cow. Then the ropers lassoed both of them. But the bull broke the rope and went. Then the cow

was brought to the village. (The woman had left her clothing.) A ring was put in her nose and she was tied up. Then the priest was informed that a woman had changed into a cow. The priest came and blessed the village. Then everyone was told to chop firewood because the cow was to be burned up.

3.6.5. The story of the fight. Then he said, "The hour has arrived that I'm going to kill you." Then he took out his knife.

Then the one who had the fiddle was stabbed. He was stabbed right here, but it only cut his pocket. Then he ran, he ran and gave the fiddle back to its owner.

Then the other man came, his knife was taken out. Then his hand was grabbed, then he began to be stabbed, he was stabbed in the face. Then he began to struggle, because he was stabbed all over, his ribs were stabbed.

Then he was let go and he began to run. He didn't go far when he fell. A light was taken to him and a lot of blood was on ground where he had fallen.

FOOTNOTES

[1]Sierra Popoluca is spoken in the southern part of the state of Veracruz, Mexico by approximately 20,000 people. It is a member of the Zoque-Mixe language family.

The text material used as a basis for this study was collected by the author in the village of Ocotal Chico, Ver. during the years 1944-1947. The SP speakers who provided the material were Fermin Gutiérrez, Miguel Ramírez, and Pantaleon Gutiérrez, all between 35 and 40 years of age.

Viola Waterhouse discussed this paper with me and made valuable suggestions. An earlier draft was presented to a discourse research conference in Dallas, March 1983.

[2]The English material used for comparison was from a Reader's Digest condensed book. Other styles of writing in English might show more passive constructions.

[3]Variations in the forms of morphemes are due to morphophonemic alternations.

[4]First person dual includes first and second person. All the person prefixes are considered to be singular; all can be pluralized. Pluralizing the 1-dual and 1st gives a distinction between inclusive and exclusive 1st plural. Plural for 1st and 1nd person is -ta'm, for 3rd person is -yaj. Examples:

anɨkta'mpa 'I and those with me go (but not you)'
tanɨkta'mpa 'we all go'
miñɨkta'mpa 'you all go'
nɨkyajpa 'they go'

[5]The problem of word order in SP needs additional study. In some Mexican Indian languages emphasis on any constituent is by fronting that constituent, e.g. Mazatec (Eunice Pike, Personal communication). It is possible that something similar could be present in SP. It does appear that the most normal order is VSO, but as indicated, any other order is possible.

I was once sitting with a group of men when a teenager came and announced, pe·toj iko'ts xiwan 'Peter he-hit-him John. One of the men immediately responded, "Who got hit?"

[6]Although SP has plural forms, it is not necessary to use them. In fact good style uses them only for emphasis. Therefore, example (15) would have all the meanings indicated.

[7]The problem hinges on the interpretation of toba'yaytʸa· ikuchiyu. The verb root top is a transitive verb meaning 'to take out'. The addition of -a'y indicates benefactive or indirective. In this verb -a'y is repeated. Thus the stem toba'ya'y could mean either 'to take somebody's something for him' or 'to take out somebody's something from it'. In other words, there are two possible translations: 'He took the other's knife away from him' or 'He pulled his knife out on the other'.

[8]If this point can be sustained by further investigation, it would indicate that SP speakers have a different outlook from English speakers.

[9]One question which might be raised is, is the use of passives dependent upon the speaker? Are there differences among speakers in their use of passives? Or does the use of passives depend upon a particular style? Although in the texts studied, one narrator does seem to use fewer passives than the other two, the differences can probably be attributed to the differences in subject matter rather than to individual differences of style.

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VII

TRANSLATION

STRATIFICATIONAL THEORY AND THE FALLACY OF "LITERAL" TRANSLATIONS[1]

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0. INTRODUCTION

0.1 The Problem From the time of the epic of Gilgamesh and even earlier, people have found materials they wanted to have translated. With over three millennia of existing translations under review, it would seem that there should be a general consensus on what translation is, how it should be effected, and what are the standards by which a translation is to be judged. However, we still have disagreement over translation as a science versus translation as an art. I consider this a false dichotomy, but it is still a real disagreement. In practical terms, the argument centers on the relative importance of the techniques involved in accurately transmitting the content or message of the original and the relevance of attaining its artistic tone. Thus, T. E. Lawrence weighed in on the one side with a prose translation of the *Odyssey*, and W. H. Auden remarked that art is what is lost in translation. In rhetorical terms, this is the argument between "literal" and "free" translations.

Now the main criticism of "free" translations is that they are sloppy and incompetent and distort the message. Certainly, they are often sloppier than they need be, but there is no objective means of drawing a line to indicate the slop limit. "Literal" translations are offered as an alternative to sloppiness, but they are generally based on a false assumption. That is, literalists assume that the best translation, the one which guarantees the closest correspondence of meaning between original and product, involves a word-by-word or morpheme-by-morpheme replacement. However, these procedures are not translation but transliteration.[2] Not that they do not have their proponents. I have heard U. S. government translators criticized because they used two different words to translate two occurrences of a single word in the original text. In any case, I show below that these transliterative approaches result in errors that are best left uncommitted (see I and II). To be fair, I also show the difficulties that a stunted use of (?artistic) imagination lead to (see III).

However, criticism of the attempt of others from a linguistic point of view does not tell us how a translation should be performed. A reasonable linguistic approach to translation via stratificational theory was presented in Makkai 1973. Makkai suggests that the proper approach to translation is to decode the entire text to get at the message and to re-encode the message in the target language, keeping in mind the purposes behind the original text and adjusting the form of the translation to suit those pur-

poses. Without recounting Makkai's work in detail, I will simply remark that this adjustment requires that an original lyric poem should be translated as a lyric poem and not as a sonnet or as prose.

In any case, Makkai's approach is the only reasonable scientific one I have seen which is based on a well-formed theory of language and communication, which does not contain the seeds of its own destruction, and which still leaves room for both the art and the artist.[3]

0.2 The Current Study Beyond doubt, the most transl(iter)ated book in the world is the Bible. Translations, transliterations, and even paraphrases abound. In the aftermath of Vatican II, the American Catholic Bishops decided to authorize a new Catholic translation of the Bible. One of the purposes behind this decision was the desire to have a Catholic Bible with the *IMPRIMATUR* which sounded somehow more "modern" or "relevant" and less distinctly Catholic than the older Douay tradition Bibles. But the major purpose was supposed to be the production of a new translation from the oldest and presumably most accurate available manuscripts.[4] The translation was to be protected from error by being as "literal" as possible.

Needless to say, many unfortunate solecisms crept (or were hurled) into this translation, which was published as the *NEW AMERICAN BIBLE*. I have chosen three of the most egregious of them for close examination in the light of Makkai's model. In each case I identify the fallacy involved in the solecism, the source of the error, and the solution suggested by Makkai's model of translation. I close with some discussion of what translation has to tell us about the construction and appropriateness of theoretical models of language.

I. CHRIST OUR *PASSOVER*

I.1 The Background In the first Epistle of St. Paul to the Christians at Corinth, chapter 5, verse 7, we see a reference to "Christ our *Passover*," a unique epithet created by the American Catholic Bishops' translation team. 'Passover' is given as a translation of Greek *to pasxa*. The word *pasxa* first appears (in Hebrew) in Exodus, where it refers to the miracle of the Angel of Death bypassing the homes of the Jewish faithful in Egypt. It also appears as the name of the annual feast commemorating this miracle. Up to here there is no problem.

The problem arose when the translation team decided that since *pasxa* was first translated as 'Passover', it should always and everywhere be translated as 'Passover' for the sake of consistency. The epithetic result of this decision, however, is counterintuitive, at the very least.

I.2 The Fallacy The relationship between a syllabic form like *pasx-* and its meaning, whatever that might be, is called a semiotic or realizational relation. The assumption of the translation team is that every semiotic relation is simplex or one-to-one. If true, *pasxa* should be translated 'Passover' wherever it occurs.

However, the translation team erred. Not all semiotic relations are one-to-one; not all words have a one-to-one relation with meaning. The team forgot homonymy, wherein two words are spelled differently but sound the same. Homonymy is a common two-to-one (or many-to-one) relation between the graphic and spoken portions of language. The team also forgot polysemy, which relates formally identical elements or words to a set of functions or meanings. For example, *stand* is formally identical to the last syllable of *withstand* and *understand*. There is no difference between them morphologically or phonologically. Formally, there is only one *stand*. Yet the three are everywhere distinct above the morphology: their syntax, semology and semantics differ. Thus are the many-to-one semiotic relations in any language, and this describes the status of *pasxa* in Greek.

I.3 The Stratificational Approach The stratificational description of the semiotic relations of *pasxa* is given in figure 1. The diagram there says that the morpheme *pasx* is related to the 'Passover feast' or to the 'Passover miracle' or to the 'Paschal lamb'. The last could be rendered 'Paschal victim" or 'Paschal sacrifice' et alia, but the basic point remains. There is no need to insist on the rendering 'Passover' in all cases. Moreover, a linguistic description of Greek shows that it is wrong to do so. Thus, in this case, a pseudo-scientific approach (transliteration) caused the problem, and a real scientific approach cleared it up.

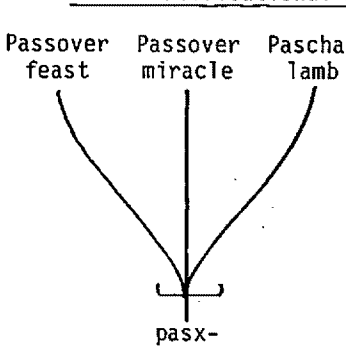

Figure 1

Ironically, a humanist approach would also have cleared up the problem. The Vulgate (Latin) translation of this passage reads "Etenim Pascha Nostrum (= agnus paschalis) immolatus est Christus." In short, reasonable scholarship, whether scientific or humanistic, would have sufficed to prevent this error. Science and art are thus complementary, rather than contradictory, and an intuitive judgement is doubly justified.

"Christ our *Passover*" is an example of the simplest type of linguistic error made by the translation team. It involves only the semiotic relations of language. Examples of this sort in the *New American Bible* could easily be multiplied, but this would serve no purpose. Instead, I turn to a more complex type of linguistic error, one which is embodied in the phrase "John the *Baptizer*".

II. JOHN THE *BAPTIZER*

II.1 The Problem "John the *Baptizer*" appears in the Gospel according to St. Matthew, chapter 11, verse 11, remaining until

his execution. This epithet, unlike the *Passover*, actually shows a bit of analytical thinking on the part of the translation team: there is the verb *baptize* and the agentive suffix *(e)r*; put them together and you get the agentive noun *baptizer*. The first time I heard this expression, I found it vaguely distressing; priests and other Catholics (and more than a few Protestants) agreed with me. However, it will take some further analysis to show the source of the error.

II.2 The Fallacy Here the fallacy relates to the structure of English and has its source in the translation team's assumption that every morpheme has a one-to-one relation with meaning. But there is a false structural consequence of this assumption, namely that a class of stem morphemes can be related to only one set of suffix morphemes.

Stem	Act	Process	State	Agent
A	ize	izing	izing	izer
B	(ize)	(iz)ing	ism	ist

Table 1

To see this, consider the data in table 1, which shows two patterns of suffixes. The *ize* verb formant is optional with subclass B, as indicated by the parentheses, and the overall situation is more complex than I have shown, but table 1 will suffice for our purposes. In essence, the subclass to which a stem belongs is determined by noting the pattern of its suffixes. As a general rule, native roots belong in subclass A, Greek and Romance roots in subclass B. Instrumental nouns have been excluded for reasons of simplicity, but the occurrence of a deverbative state noun like *baptism* implies an agentive noun of the form *baptist* (compare *tourism*, *tourist*). In fact, the first time I heard "John the *Baptizer*," all I could think was that it sounded remarkably like "John the *womanizer*".

II.3 The Stratificational Approach In this case, the stratificational description must be given in two parts: the structural or tactic relations and the semiotic or realizational relations.

Consider first the structural relations. These underlie the data in table 1. The two sets of stems share act and process suffixes, differing only in the occurrence of *ize*, which is optional, as mentioned above. The stems differ in the state and agentive suffixes. I will not describe these structures in detail, as I have greatly reduced the amount of relevant data included.

Figure 2

Consider instead the semiotic relations of the agentive suffix, where a critical distinction exists. The semiotic relation is a one-to-two relationship and is illustrated graphically in figure 2. Logically, there is an OR relation, just like the relation in figure 1, but its orientation is opposite. That is, in figure 1, three meanings or functions had one form; here one function (agentive) has two possible forms (*r* and *ist*). Like the relation in figure

1, this one is common in language. Such downward OR relations describe morphophonemic alternations and certain types of allomorphs, to give just two examples. In fact, they occur at every level of language.

For any linguistic data, a full description requires specification of both structural and semiotic relations. In this case, however, consideration of either structural or semiotic relations would have sufficed to tell the translation team that their coinage was at least unfortunate, and that the traditional usage continues to be appropriate.

Linguistic errors of this sort are also common enough in the *New American Bible*. But there are also errors which result from the translation team's imaginative interpretation of linguistically simple forms. These illustrate the objectionable side of "free" translations. For an example, I turn now to the *astrologers*.

III. THE *ASTROLOGERS*

III.1 The Problem The Gospel according to St. Matthew, chapter 2, verse 1, tells of travelers arriving in Judea, searching for a Child whose birth had been signaled in the heavens. The translation team, here desiring to eliminate traditional usages, rendered Greek *magoi* by *astrologers*. To me, this is the worst of the solecisms they perpetrated.[5] Again, they indulged in some measure of analysis. This time it was pseudo-Greek etymology: *astro* refers to stars, *log* refers to study, and *er* is the agentive suffix. Thus *astro* + *log* + *er* should mean 'one who studies the stars' in Greek. Therefore, it should suffice for modern English.

III.2 The Fallacy It is impossible to coin a word in Greek which is consistent with the structure of Greek, transfer it to English, and have it mean the same thing in English as it does in Greek. First, the structure of English differs radically from that of Greek; they are different languages. Second, the word *astrologer* already exists in English with a meaning of its own. The meaning 'one who studies the stars' cannot be grafted to this form without danger of rejection in an almost biological sense. Third, the meaning 'one who studies the stars' already has a word to express it in English, and the word is not *astrologer*. Thus the almost universally negative response which *astrologer* in this context evoked in Catholics, lay and clergy alike, should not be surprising. Native speakers of English all have the stored structures of language which justify my argument, even if they are not consciously aware of them; you do not need a knowledge of the anatomy of the hand to sign your name.

However, there is a reasonable approach to this problem. The "meaning" of a word lies in the semantic area the word is related to by its semiotic relation(s). A study of this semantic area for *magoi* will show the inappropriateness of 'astrologers' at once and suggest alternatives.

Consider first the negative. Astrologers today publish horoscopes, advising twelve groups of people what they should do with

their professional and love lives. There were no newspapers two millenia ago. Therefore we can safely conclude that these travelers were not astrologers in the modern sense. Since that modern sense is what the modern rendering inevitably evokes, the usage is a misleading and inaccurate translation of *magoi*.

Turn now to the positive side. In order to discover an appropriate translation of *magoi*, the procedure applied to English above must be applied to Greek. Consider what semantic de- and connotata *magoi* evoked two thousand years ago by looking at what the *magoi* themselves did. First, they took measurements of the movements of sun, moon, planets, and stars as accurately as their technology allowed: they were *astronomers*. Second, they timed the periodic movements of sun and moon to determine months and years: they were *calendar makers*. Third, they kept track of the changes of the seasons to determine optimal planting dates for different crops: they were *agronomists*. Fourth, they determined the likely times for rain by plotting the phases of the moon against the seasons of the year (= phases of the sun): they were *meteorologists*. To perform these calculations, they had to master the manipulation of numbers: they were *mathematicians*. They also had to record these observations, meaning that they had to master the art of writing: they were *scribes*. Moreover, they were responsible for keeping the records of their own observations and those of their predecessors: they were *librarians*. Any of these terms would have been a more accurate translation of *magoi* than *astrologers*, though none would have sufficed, for there is more.

These people had access to all the collected wisdom of the best minds of their age. They tried to establish the laws by which the universe is run and sought correspondences between signs in the heavens, e.g. the solstice, and results on earth, e.g. change in the length of daylight hours. Such people had great and even arcane knowledge, knowledge beyond that of ordinary mortals. We could call them *sages*, if a Latin root were desirable. However, the Vulgate Bible did not translate Greek *magoi*; rather, *magoi* was preserved as Latin *magi*. This word was adopted by English directly, rather than translated, undergoing only regular phonetic shifts. It now has the additional advantages of familiarity through a long tradition and a unique application to a particular group of people. It should certainly have sufficed for the translation team, as it is most appropriate. But if for some reason an Anglo-Saxon translation is preferable, try the *Wise Men*. We might argue as to which is the better choice, but both *Magi* and *Wise Men* are infinitely superior to *astrologers*.

III.3 The Stratificational Approach The approach required in stratificational theory is diagramed in figure 3 on the following page. Beginning at the lower right with the Greek form *magoi*, we seek out its semantic significance. It turns out to have a one-to-one semiotic relation to 'the travelers to Bethlehem', which evokes all we know about them. This semantic image is then related to the English language, where the semiotic relation leads us down to a choice between *Magi* and *Wise Men*. There is more to it than that, but this outline will suffice.

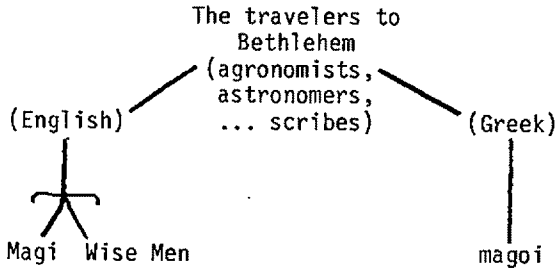

Figure 3

In this case, the (scientific) stratificational approach is an accurate graphic parallel to the (humanistic) considerations detailed in section III.2. No further comment is necessary. I turn instead to a consideration of the translation process with regard to the structure of language and the construction of linguistic theories.

IV. TRANSLATION AND THE STRUCTURE OF LANGUAGE

IV.1 Preliminary Considerations The description of language presents what engineers call a black box problem: you can see (or guess) what goes in and what comes out, but you cannot look inside to see the mechanism directly. The temptation to construct any kind of self-consistent theory to account for this is strong. But for a theory to work, it must be appropriate to the input-output correspondences. It must account for the abilities of the black box with regard to its relations with the outside world, in this case, translation.

IV.2 The Consequences of Translation The three cases studied show a need for two types of patterns in language. The first need is for semiotic or form-meaning relations which permit the transmission of messages. Messages are, at base, what is translated. The semiotic relations are not all simplex or one-to-one. We have seen an indication that they form an interconnecting network, the realizational patterns of stratificational theory. This is shown in sections I and II.

Section II also shows the need for structural relations which identify patterns of linguistic types, in this case, morphological root classes. These, too, form an interconnecting network or networks which, in turn, interlock with the semiotic relations. The structural networks are the tactic patterns of stratificational theory.

IV.3 Considerations of Use Two distinct uses of language structure can be seen. Language can be used to encode a message into sound, producing a text, and it can be used to decode a message from sound, interpreting a text. Decoding and encoding are certainly distinct processes which both use language, but they are not necessarily linked. They can be linked, however, in a number of ways. A linkage which is of interest here is the process of decoding a message from a particular text and re-encoding the same message into a different text. If the initial and final texts are in the same language, what results is called a para-

phrase. If the initial and final texts are in different languages, what results is called a translation.

Now in both paraphrase and translation, stylistic editing or readjustment is possible. That is, you could adjust the form of the final text to parallel the form of the initial text. Makkai did this in his example as he went along; however, his example did not require much readjustment. In the general case, as much readjustment could be done as was necessary or desirable or convenient.[6] This readjustment is where the artistry of the translator comes into play, for it is the translator's artistry which informs the translation. Auden was right: the art of the original author is lost in the translation.

In short, and without implying anything about relative superiority, it could be argued that a good translation is even more a work of art than the original text. It embodies interpretive and (re-)constructive art. The original text necessarily supersedes a good translation only in the originality of the creative impulse which lies behind it.

V. SUMMARY

V.1 Conclusions An investigation into only three of the solecisms of the New American Bible shows that

1) Language requires an interlocking network of semiotic and structural relations;
2) Encoding and decoding texts are two distinct processes which use the network; and
3) Translation and paraphrase differ only in the number of languages involved.

In addition, it would be reasonably safe to conclude that attention to either these linguistic considerations or to humanistic scholarship would have produced a much better translation than the one studied.

V.2 Some Applications It seems self-evident that theories of language ought to be judged mainly on their ability to account for the performance of language users rather than on the degree to which they can formalize a small percentage of the structural relations of language. After all, different approaches to formalizing the same data can be used; rules, relations, even verbal statements can do the job. The bottom line is results in accounting for performance abilities. Therefore, it seems reasonable to use an approach to the formalization of language competence which at the very least does not prevent an account of language user performance.

Among current theories of language, there are three which insist on the description of both semiotic and structural characteristics of language texts of indeterminate length: Glossematics, Tagmemics, and stratificationalism. They have the potential, at least, of accounting for language user performance. Several systemic/functional schools also have this potential, but some do not. For example, it seems that Halliday's version of systemic grammar does, Hudson's does not. Textlinguistics might, if certain short-

comings on the structural side are remedied. If I understand its consequences correctly, equational grammar also has the potential, assuming its structural side is expanded appropriately.

Those of the current theories which cannot succeed in this connection include those which limit the text to a single sentence, only generate (encode) messages, or fail to take meaning into account as something distinct from both structure and lexicon.

In short, as Ernst Pulgram is so fond of reminding us, we cannot afford to ignore possible sources of information about language. Failing to build this information into our theoretical speculations is dangerous and leads ultimately to the dead-end trap of inappropriate theories and self-justifying models.

Makkai 1973 has looked at the translation process in light of a theory, and I have looked at theory as a standard for judging what went wrong in a translation. Both studies shed light on the black box that is language. My friends: go and do likewise.

NOTES

[1]This article is dedicated to Dr. Wayne T. Sandefur, Professor Emeritus of Physical Education at the University of Florida, who suggested that a tirade I once delivered verbally deserved a more serious incarnation.

[2]I am indebted to Dr. Jayne C. Harder of the University of Florida Program in Linguistics for pointing out this means of accurately characterizing "literal" translations.

[3]A false hope: when the oldest manuscripts were copied one to two centuries after composition, there is plenty of time for scribal error to have crept in. Ronald Knox's approach offers the only scholarly hope, i.e. a running collation of and commentary on all old manuscripts.

[4]This is not to downgrade Tagmemic theory, for which I have much respect (see section V.2). But Tagmemic theory was formulated to a great extent with the specific requirements of translation in mind and stratificational theory was not. The degree of confluence between the two theories tells something about the congruence between the requirements of translation and those of general communication (see section IV.3).

[5]Evidently every priest I know agrees with me. Since 1970, when this translation appeared, I have attended Epiphany Mass in English 11 times with 11 different priests. Every one of them gave an Epiphany sermon that began with a justification of this rendering. Until now, it has not been attacked publicly, to my knowledge. The priests' justifications were therefore gratuitous, suggesting that they needed to justify the rendering to themselves because of their own uneasiness with it.

[6]For example, T. E. Lawrence's prose translation of the *Odyssey* is an example of a final text whose form desperately needed readjustment.

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VERBAL PROBLEMS IN MATHEMATICS AND TRANSLATION

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Introduction

Evidence of translation from one language to another can be found as far back as the third millennium B.C. (Nida 1964:11, Avila 1982:31). And the first theoretical statements on the science or art of translation itself can be traced back to Classical Roman times when the basic dichotomy of translation *ad sensum* vs. translation *ad litteram* was first enunciated. (For historical accounts of translation theories and practices, see, for example, Amos 1920, Mounin 1965, or Kelly 1979). However, it has not been until the last couple of decades that linguists have begun to look more systematically at translation from the standpoint of the structural and semantic operations involved in this process (e.g., Andreyev 1964, Nida 1964, 1969, 1976, Nida and Taber 1969, Catford 1965, Bolinger 1966, Walmsley 1970, Seleskovitch 1976, and Kaneko 1981, among others).

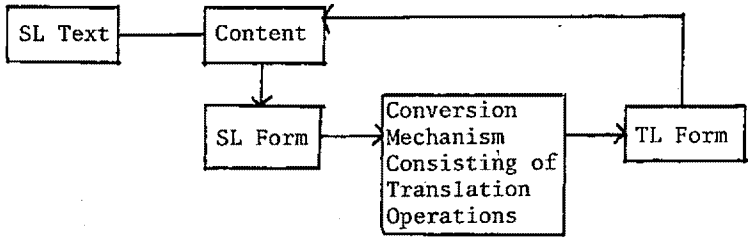
The models of the translation process which have emerged normally draw upon some specific theory of language design (i.e., taxonomic or transformational). Often, these are used to develop, refine, investigate, or elaborate some aspect of the theory adopted. What would probably be more useful to translators is a working model of translation as a general psychological mechanism. The purpose of this paper is, in fact, to look at the types of mental operations which underlie a homologous translation system, namely the setting-up of equations in algebra from word problems. By cataloguing what goes on in this process, it is our view that translation can be described as a general psychological system, rather than as simply a set of linguistic strategies for converting one language into another. The reason for choosing verbal problems to investigate general translation operations is that they can be viewed less as problems in mathematical reasoning than as exercises in translation. As Polya (1957:174) puts it: "To set up equations means to express in mathematical symbols a condition that is stated in words: it is translation from ordinary language into the language of mathematical formulas. The difficulties which we may have in setting up equations are difficulties of translation."

A General Model of Translation Systems

The first step in attempting to characterize a general model of translation on the basis of the setting-up of algebraic equat-

ions is to adopt some working definition of translation. We can designate any systematic conversion of an input, or source language (SL), text into an output, or target language (TL), text that preserves the intended meaning or content a *translation system*. The crucial notion here is meaning equivalence. As Kaneko (1981:370) observes, translation always "presupposes meaning equivalence between two sentences belonging to different languages." A translation system, therefore, must contain a mechanism which converts an SL text into a corresponding TL one by a set of meaning-preserving operations. A *translation operation*, consequently, converts SL form to TL form without altering the content. This model of a translation system can be represented schematically in the following manner:

A General Translation System



This model is essentially applicable to any type of conversion, or translation, system: e.g., converting Fahrenheit to Centigrade degrees, changing Roman numbers into Arabic ones, representing verbal instructions with pictures in sign systems, setting up equations in algebra, translating from one language to another, etc. In each case, an SL, or input, form is to be converted into a corresponding TL form by some content-preserving mechanism. Any translation problems that emerge are specific to the operations that are involved in a particular translation system. For example, when translating from one language to another problems usually arise on the translatability of idioms, culture-specific expressions, and the like. (For a discussion of such problems, see, Melby 1981:464-465). These problems are to be solved within the the framework of the operations which make up the conversion mechanism. By looking at what is involved in setting up algebraic equations, we will now attempt to identify the general content-preserving operations that are likely to constitute the conversion mechanism of any translation system.

As Perelman (1979:38-39) points out in his algebra textbook entitled *Arithmetica Universalis*, the great Newton was actually among the first to show that solving verbal problems consisted essentially of translating verbal language into the language of algebra. The following is a model problem used by Newton that exemplifies this point:

In Ordinary Language	*In the Language of Algebra*
A merchant has a certain sum of money.	x
During the first year he spent 100 pounds.	$x - 100$
To the remaining sum he then added one third of it.	$(x-100) + \frac{x-100}{3} = \frac{4x-400}{3}$
During the next year he again spent 100 pounds.	$\frac{4x-400}{3} - 100 = \frac{4x-700}{3}$
And increased the remaining sum by one third of it.	$\frac{4x-700}{3} + \frac{4x-700}{9} = \frac{16x-2800}{9}$
During the third year he again spent 100 pounds.	$\frac{16x-2800}{9} - 100 = \frac{16x-3700}{9}$
After he added to the remainder one third of it,	$\frac{16x-3700}{9} + \frac{16x-3700}{27} = \frac{16x-14800}{27}$
his capital was twice the original amount.	$\frac{64x-14800}{27} = 2x$

To determine the original capital, we have only to solve the last equation. It is obvious, as Newton demonstrated, that the process of setting-up equations reduces to a translation system whereby ordinary language is converted to algebraic language by a series of cognitive operations. The task, then, is to determine what those mental operations are. By observing the problem-solving process closely, it is possible to posit three general cognitive operations: *analysis*, *transference*, and *synthesis*. These are similar to those proposed by Nida (1969) and Kulagina and Mel'čuk (1967), but different in that they apply to any translation system. Nida does not, for example, adopt a synthesis operation, and Kulagina and Mel'čuk do not posit an intermediate transference operation, preferring to view translation solely in terms of analysis and synthesis.

Analysis

This is an *a priori* intralinguistic operation that must be performed on the SL text. It can be characterized as an essentially *interpretive* process, involving an understanding of the SL

content as expressed in terms of the SL form. Analysis constitutes the obvious first step in setting up equations, since the problem-solver must, above all else, understand *what* is required in terms of *how* it is expressed. The following five problems will suffice to illustrate some of the different modalities involved in the analysis of the SL text:

(1) Alice is three times as old as Joan. In eight years, the sum of their ages will be 28. What are their present ages? (Russell 1960:27).

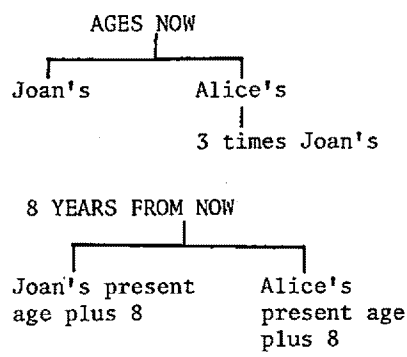
(2) Young Mrs. Martin called her mother on the telephone to ask help in learning her husband's income. "This morning he told me that since we were married (and that was three years ago) we spent four-tenths of his yearly income on rent and the upkeep of the house, one-fourth on clothes and food, and one-tenth on other incidentals. He never told me what his income was. But only a few days ago I found his bank book, and he had saved up $1,500. Don't you think that I ought to know what my own husband earns?" Can you find out? (Bakst 1967:189).

(3) If a brick balances evenly with three-quarters of a pound and three-quarters of a brick, what is the weight of the whole brick? (Mott-Smith 1954:6).

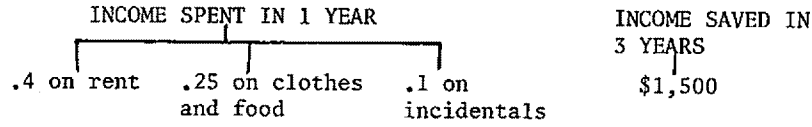
(4) If Jack were two years younger than Jill would be if Jill were two years older than half as old as Jack would be if Jack were two years younger than twice as old as Jill would be if Jill were twice as old as Jack is, he would be ten years older than he is now. All of this makes Jack's age quite clear-- or does it? (Hunter 1965:58).

(5) In how many minutes after 8 o'clock will the minute hand overtake the hour hand? (Moore 1951:110).

The content in (1) can be analyzed into its crucial components by means of a simple "tree diagram":

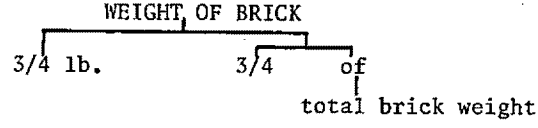


The analysis of (2) yields the following configuration:



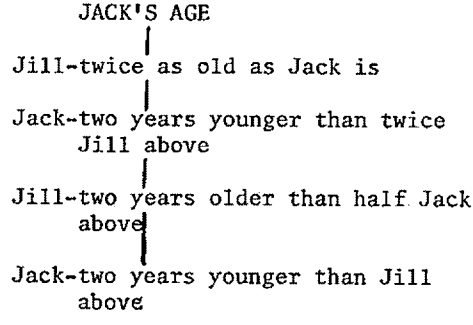
The catch here is that the amount saved refers to a three-year period, whereas the statement concerning expenditures refers to a one-year period.

In (3), the compound statement "three-quarters of a pound and three-quarters of a brick" may lead, if improperly analyzed, to the erroneous conclusion that the brick weighs 3/4 + 3/4 pounds. A correct analysis reveals the following relations:

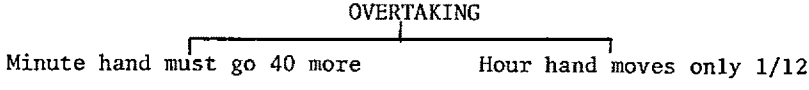


The right-hand branch shows the key to the solution of this problem, namely that 3/4 of some weight is to be taken into consideration.

In (4), the analytical process is a complex one because of clause, or phrase, embedding in the SL text. The technique used in such problems may be called "inverse" analysis: the order of the embedded clauses is inverted, so that the last one contains the most deeply embedded mathematical notion:



Example (5) is interpreted as follows:



units than hour hand as fast as minute hand

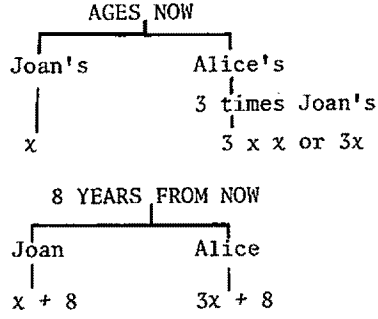
The left-hand statement is so because there are 40 minute divisions for the minute hand to go to catch up the the hour hand which is on 8 o'clock on the dial.

The point to be made here is that in any translation system the first operation to be performed on the SL text is an interpretation of its content in terms of its form. *How* does the text say *what* it says? In translating Roman numerals into Arabic ones, the translator must first of all determine what numerical quantity is involved. In setting up equations, the problem-solver must analyze the content of the verbal statement in order to establish the required relationships. So too, in language translation: the translator must break up the SL form into its logical, or "deep structure" components as shaped by words, phrases, embedded clauses, and so on.

Transference

Once the content of the verbal problem has been properly analyzed, the task of the problem-solver consists in giving it an algebraic form. This is a transference operation by which the key components of the SL form are transferred, or mapped, into algebraic symbols. As Schneider (1965:vi) illustrates, a simple mapping system converting verbal expressions into mathematical signs can be normally constructed on the basis of either an overtly-stated or implied mathematical content. Thus, for example, the content 'addition' is usually expressed by words such as *and, sum, total, add, together*, etc., and is translated by the sign +; similarly, 'subtraction' is normally conveyed by expressions such as *less, from, take-away, difference, is greater than, subract*, etc., and is translated by -; and so on.

Example (1) above, can be transferred, or mapped, into algebraic symbols as follows:



The problem states that in eight years their ages will be 28, which, of course, implies an addition symbol: $x + 8 + 3x + 8 = 28$.

Similarly, (2) can be mapped into algebraic symbols as follows:

x = total income in one year

INCOME SPENT IN 1 YEAR

.4 on rent	.25 on clothes and food	.1 on incidentals
$.4x$	$.25x$	$.1x$

Here, it is obviously necessary to relate all quantities to a one-year period. Thus, the total income spent in one year ($.4x + .25x + .1x$) and the total income saved in one year (1/3 of \$1,500 or \$500) are related as follows: Total income in one year = amount spent plus amount saved: $x = .4x + .25x + .1x + 500$.

Problem (3) can be converted to its corresponding algebraic form as follows:

WEIGHT OF BRICK

x

3/4 lb. 3/4 of total brick weight

x

Here, 3/4 of x is, of course, $3/4\ x$. Thus, the total weight of the brick (x) can be expressed as $x = 3/4 + 3/4\ x$.

Problem (4) illustrates how embedded clauses correspond to bracketing signs in algebra:

JACK'S AGE

x

Jill-twice as old as Jack

$2x$

Jack-two years younger than twice Jill above

$2(2x) - 2$

Jill-two years older than half Jack above

$\frac{1}{2}[2(2x) - 2] + 2$

Jack-two years younger than Jill above

$\frac{1}{2}[2(2x) - 2] + 2 - 2$

The final output of this procedure is equivalent to $x + 10$ because Jack would be ten years older than he is now: $x + 10 = \frac{1}{2}[2(2x) -$

$2] + 2 - 2.$

Problem (5) is converted to algebraic language as follows: by letting x represent the number of minutes after 8 o'oclock in which the minute hand overtakes the hour hand. Thus, the difference in distance between the two hands can be expressed as $x - x/12 = 40$.

The underlying principle in transference is, clearly, a mapping of certain "semantic spaces" expressed by the SL form with corresponding TL symbols and objects. In the case of algebra, the problem-solver uses letters and signs to map verbal expressions. Similarly, in language translation, the task is to find the appropriate linguistic objects (words, phrases, etc.) that map the correctly-analyzed SL text into TL form. Transference is, obviously, an interlinguistic operation.

Synthesis

The final task of the problem-solver is to synthesize the algebraically constructed message into a more manageable form. Thus, in (1) the sequence $x + 8 + 3x + 8 = 28$ can be simplified to $4x + 16 = 28$; the expression $x + .4x + .25x + .1x + 500$ of (2) can be shortened to $.25x = 500$; the statement $x = 3/4 + 3/4\ x$ can be reduced to $x/4 = 3/4$; the complex equation $\frac{1}{2}[2(2x)-2] + 2 - 2 = x + 10$ can be simplified to $x - 1 = 10$; and the equation $x - x/12 = 40$ of (5) reduces to $11x/12 = 40$. Solving these equations will give a solution to each problem.

Clearly, then, synthesis is an intralinguistic operation that adjusts the transferred message into a more manageable, or appropriate, TL form. In natural language translation, it refers to the arrangement of the transferred, or mapped, words, phrases, etc. into a structurally appropriate TL form.

Conclusion

A consideration of verbal problems in algebra saliently shows that the general mechanism that converts the ordinary language of the problem into an appropriate algebraic form can be described in terms of three basic mental operations: analysis, transference and synthesis. This three-level process can also be applied to natural language translation, although much more research is needed in this area. It should be remarked that more than one solution is possible to each problem, in the same way that more than one TL form will translate an SL text in language translation. This can be traced primarily to different mapping modalities at the transference level. Moreover, it should be mentioned that these three operations do not occur necessarily in sequence, but may indeed overlap or occur simultaneously--especially in the case of experienced translators.

As a final remark, it is interesting to note that "interdisciplinary" approaches to linguistic problems, such as the one utilized in this paper, are very useful in demonstrating that linguistics is essentially an interdisciplinary science. Such approaches

point to the overall unity of science. As Hockett (1982:275) aptly puts it, we should "strive against any elementalistic acceptance of the various branches of science, or separate 'sciences', as having no necessary relation to each other except that of agreement on method. In actuality, their various subject-matters overlap, so that we must search for overall consistency."

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THE GAIN AND LOSS OF INFORMATION DURING TRANSLATION

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1. Introduction

One of the problems of interest to translators and translation theorists is the notion of the exact translation: is such a thing a possibility? And, if exact translations are possible, are they necessary or even desirable?

In this paper it will be shown that there are certain cases which effectively invalidate an Exact Translation Hypothesis such as those proposed in Keenan (1978) and Katz (1978). These cases involve the unavoidable loss or gain of information during the translation process; unavoidable, that is, if the rules of the Target Language (the language into which one is translating) are not to be violated. If a translation transmits more or less information than the original text, it cannot be exact.

Examples of cases in which information is gained or lost during translation are to be found in many works on translation and comparative linguistics, such as Nida (1964), Nida & Taber (1969), Vinay & Darbelnet (1968), and Wilss (1977). Lexical, morphological, and syntactic structures are all vulnerable to such change in the information content; change at the morphological level will prove to be of particular interest. As will be shown, cases of information gain and loss are significant not only for translation theory but for a theory of language and thought.

In order to understand the context in which such gain and loss is examined, it is first necessary to discuss the nature of translation and of information.

2. Translation

The adequacy of a translation is generally judged by the impact it has on its audience; in this, translation theorists follow the lead of Nida (1964) and Nida & Taber (1969). The response of the addressees of the translation should be as similar as possible to the response of the original addressees to the original text.

This response is made up of several components: an intellectual component, comprising the processing of the utterance, the formation of mental representations, and generally understanding the message; an emotional response to the content of the utterance; and an aesthetic response to the form of the message. Depending on the function of the text in question, one or other of these components may be seen as primary; the other response components may be sacrificed for its sake. If the emotional response to a given text is the most important, for example, the translator may reckon with eliciting a different intellectual response than

than the original author in order to be able to elicit a similar emotional response. As part of this process, certain information may have to be changed, omitted, or added to the text. Similarly, the information content may have to be altered somewhat in order to prevent the translation from sounding awkward and uncomfortable to the Target Language speakers.

It should be noted that a loss or gain of information can occur not only during translation between languages, but also when paraphrasing within one language. After all, both processes are types of rewording or reformulating a message. If, for example, one compares the sentence he died with the German translation, er ist gestorben, on the one hand, and with same-language paraphrases such as he passed away, he croaked, he kicked the bucket, he expired, on the other, one finds that the paraphrases all convey more information than either the original or the translation. Not only do they convey the information that some creature ceased to live, but they also transmit information about the speaker's attitude towards that event. The use of a colloquialism or a euphemism serves to convey such information. There is no a priori reason why translation should be less likely to result in a change in the information content of a text than any other type of rewording. Thus, the addition or omission of certain pieces of information need not and does not mean that a translation is not adequate.

The domain of translation is the text as a whole-- where text is defined as "that which is to be translated"-- rather than the sentence or the word. For one thing, neither sentence nor word are stable cross-linguistic entities. A single sentence in Language A, for example, may be translated as two or three sentences, or as part of a longer sentence in Language B; the same is true of the word. Also, as we shall see, information that is gained or lost within the boundaries of one particular sentence may not be gained or lost by the text as a whole.

3. Information

3.1 Definition

Information may be defined as factual or presumed knowledge of the world. It may be acquired either through direct sensory experience or by decoding a spoken or written utterance; only information acquired through linguistic channels is relevant here.

Information may be conveyed by lexical, morphological, and syntactic structures. Presuppositions, linguistic and sociolinguistic, are also a source of information.

3.2 Grammatical Sources

One of the most obvious sources of information is the meanings-- denotative, referential, and connotative-- of the lexical items in an utterance. By knowing the meanings of words, the addressee is in a position to acquire certain information from the utterances he hears or reads.

Sentence (1), for example, conveys certain information about

1. Max spilled his guts

someone called Max. The addressee knows, or is presumed by the speaker to know, the reference of the name Max. Knowing the meaning of the phrase to spill his guts, i.e. "to reveal information that should have been kept secret," he can learn something about Max's actions. And if he is aware of the pejorative connotations of the idiom, then he learns something about the speaker too, namely that Max's action angered him.

Connotative meaning can thus be a source of information about the speaker's attitude towards the events, etc., under discussion. By using lexical items with favourable or unfavourable connotations, he can convey such information less explicitly than if he were to express it in so many words.

2. Max told all, to my disgust

For example, sentence (2), a paraphrase of sentence (1), conveys the information about the speaker's attitude towards Max far more explicitly than the original does. Information transmitted via connotation in the original is expressed explicitly in the latter. The explicitness of a particular piece of information may affect the addressee's comprehension of an utterance: it is possible to be unaware of the connotations of a particular expression, even if one knows its denotation.

The choice of a lexical item from among several synonymous ones can also reveal information about the speaker's perception of the speech situation. The use of a colloquialism, especially a vulgar one such as spilled his guts, indicates that the speaker perceives himself to be in an informal situation. Had he felt the context to be formal, he would probably have formulated the message differently, possibly as in sentence (2).

Morphological structures, such as inflections, are also sources of information, as are syntactic structures, such as word order. In sentence (3), for example,

3. Margaret fed the cats

it is the plural morpheme -s in cats that conveys the information that there were two or more cats involved. The English word order reveals who was agent of the action, i.e. that it was Margaret who fed the cats and not vice versa.

A particular piece of information may be marked at different levels of the grammar in different languages; e.g. lexically in one language, morphologically in another. In example (4), the information about who loves whom is conveyed by morphological means (i.e. inflection) in Latin, by syntactic means (i.e. word order) in English.

4a. Agricola puellam amat
b. The farmer loves the girl

Sometimes a particular piece of information, e.g. number, cannot be encoded in any regular fashion in a particular language.

There is also variation within individual languages. In

English, for example, not all nouns are overtly marked for number; some, such as sheep or deer, do not take a plural marker. They convey less information than words that are so marked, and are ambiguous in certain contexts, e.g.

5. Margaret fed the sheep.

3.3 Presuppositions

Information is conveyed not only by what is actually said in any utterance, but also by what is presupposed. Presuppositions, both linguistic and sociolinguistic, are a valid source of information. A sentence such as (6), for example,

6. The Chancellor of the University is 8 months pregnant

tells one more than the speaker actually says. Not only do we learn that the Chancellor is 8 months pregnant, but also-- which is not explicitly stated-- that she is an adult female human being. The circumstance that she is pregnant presupposes the two former conditions, and the circumstance that she is Chancellor of the University presupposes the latter. These presuppositions would remain valid even if the sentence itself was found to be false.

We have already seen that sociolinguistic factors may dictate the choice of one of several synonymous lexical items; that the use of a colloquialism usually presupposes an informal communication context. An expression like kick the bucket for die, for example, would seem anomalous in a funeral parlour.

In a language with both formal and informal second person pronouns (such as German with formal Sie and informal du and ihr), the choice of one or the other presupposes considerable information about the relationship of speaker and addressee. If one translates a sentence such as (7a) into English, one cannot help losing information.

7a. Du siehst sehr glücklich aus
b. You look very happy

In the first place, the German pronoun du indicates that there is only one addressee, which information is not available in the English translation. Also, in German the use of the familiar pronoun indicates that a certain relationship holds between speaker and addressee: either they know each other very well or are for some reason on terms of solidarity or the addressee is a child or an animal or the speaker wishes to express great contempt for the addressee. Out of context, it is not clear which is the correct interpretation, but in context there would be little difficulty in arriving at it. The English translation, even in context, conveys none of this information.

Similarly, when translating from English into German, one would generally by unable to avoid adding information about the speaker-addressee relationship to the text. This type of unavoidable gain or loss of information occurs when the Source and Target Languages do not require the same portions of real-world experience to be

encoded linguistically.

4. Gain and Loss of Information

4.1 Introduction

As we have seen, translation occasionally results in a change in the total information content of a text. The translator sometimes cannot avoid either adding or omitting certain information, if he is to produce an adequate Target Language text. For it must be remembered that his goal is to produce an adequate translation, that is, a text that evokes as similar as possible a response in its addressees as the original did in its addressees. For this reason, he must avoid formulating the message in a way that sounds awkward or bizarre to Target Language speakers, unless the original text also produced that effect.

8a. Hast du die Prüfung bestanden?
b. Did you, with whom I stand in a familiar relationship, pass the test?
c. Did you pass the test?

For example, sentence (8c) would be a far more adequate translation of (8a) than (8b) would, even though it conveys less information than the original. This is because (8b) sounds extremely strange to English speakers, and as Ivir (1981; 212) says: "drastic departure from the linguistic habits of the community would endanger communication." Sentence (8b) departs drastically from the speech habits of English speakers and would impair communication, in that the strangeness of the form of the message would distract the addressee from the content. But (8c), a normal English sentence, is an adequate translation of (8a), also a normal sentence.

Since information may be conveyed at the lexical, morphological, and syntactic levels of the grammar, it may also be lost or gained at each of those levels.

4.2 Lexical

Information carried by lexical items is the most visibly vulnerable to change during translation. It is well known that different languages have different vocabularies; they do not all have words for the same collection of objects, events, attributes and relationships.

In some cases, the people of a particular culture will have a word for some object or activity that is unique to that culture. Translating out of that language may pose difficulties for the translator. Similarly, translating into a language whose speakers are not familiar with certain concepts mentioned in the text poses problems. The translator must resort to descriptions and explanations when there is no standard translation equivalent. But this is a practical rather than a theoretical problem; it is not surprising that where a given concept does not exist the corresponding word does not exist either.

A more interesting type of lexically based information content change occurs when two languages have words for the same semantic

field but segment it differently. An example from English and German involves the semantic area that in English is covered by the verb to eat. In German this area is shared by two words: essen, which is subcategorized for [+human] agents and fressen, which takes [-human] agents. The relationship may be diagrammed as follows:

9. eat

fressen essen

In most cases, there will be indications throughout the text that the agent of an action is or is not human. But there may be times when this is not so: in single-sentence texts, for instance.

10a. Cyrus did not eat much
b. Cyrus hat nicht viel gegessen

In sentence (10a), for example, there is no indication of whether Cyrus is a person or an animal. In (10b), on the other hand, the verb essen indicates clearly that he is human. The translator was forced to choose one of the alternatives, and by doing so added information to the text. He may, in fact have falsified the text, going against the original text-producer's intentions; possibly Cyrus was supposed to be an animal, even though there is no evidence of this in the text.

A somewhat different situation is exemplified by (11):

11. bullet ball balloon

balle boule bille ballon

This French-English example illustrates a many-to-many relationship, as opposed to a one-to-many relationship like (9) (cf. Nida & Taber, 1969; 21). Ballon, for example, is translatable by both ball and balloon, but it does not completely contain both terms within its frame of reference, as eat does essen and fressen. Ball may also be translated by several other French words, depending on what the real-world referent is. Cultural and/or contextual knowledge is necessary to avoid mistranslation.

Examples like the above are sometimes used as evidence supporting the Linguistic Relativity Theory. According to this hypothesis, if people speaking a given language use the same word for two objects (or activities etc.), they are likely to perceive those objects as actually being the same. On the other hand, speakers of a language in which the objects in question have different names will probably perceive them as being different. This will be discussed in Section 5.

4.3 Syntactic

Change in information content occurs less frequently at the syntactic level than at the lexical and morphological levels. This is in part a function of the nature of information expressed syntactically. For example, a passive sentence such as (12a) conveys the same information about who did what to whom as the active sentence (12b).

12a. Henry was kicked by Louise
b. Louise kicked Henry

The difference lies in the information transmitted about the speaker's attitude; it may reveal which pieces of information he considers to be most important, as passivization is generally used as a focussing device. Its use is also dependent on the co-text of the sentence, i.e. which information is given and which new.

If a passive construction in English is to be translated into a language in which passivization is rare or non-existent, it will probably not be possible to translate it as a passive. But whatever focussing device is common in the Target Language will be used, and information need not be lost. It will simply be rearranged and presented differently.

One syntactic structure that can be the source of a loss or gain of information is coreference, negative and positive. Languages differ according to whether they require the identity or non-identity of noun phrases and anaphora in a sentence to be marked linguistically or left vague. For example, coreference is less consistently marked in English than in German. Thus, the possible German translations of (13a) will convey more information than the original.

13a. Georg$_i$ was jostled by a man$_j$; he$_{i,j}$ took his$_{i,j}$ wallet
b. Georg$_i$ wurde von einem Mann$_j$ gestossen; er$_i$ hat dessen$_j$ Brieftasche genommen
c. Georg$_i$ wurde von einem Mann$_j$ gestossen; der$_j$ hat seine$_i$ Brieftasche genommen

In English, the antecedents of the anaphors are not specified; it is not clear who stole whose wallet. In German, however, this information is marked explicitly. In order to translate (13a), then, the translator must decide which of the possible interpretations is the more likely.

4.4 Morphological

Morphologically expressed information differs somewhat in nature from lexically and syntactically expressed information. Information expressed by lexical or syntactic means is generally "free" to a certain extent: it represents the speaker's conscious selection of certain pieces of information from among the totality inherent in a particular experience. Morphologically expressed information, on the other hand, is generally required: it consists of certain pieces of information which speakers of a language must make explicit in order to comply with the grammar of that language. An example may help make this distinction clearer.

14. Andrea wrote several letters

First of all, the speaker has a choice of whether to speak of the experience or not; he is not forced to speak of it. He also has a choice of lexical items; he may choose from among several synonyms or quasi-synonyms. For example, he might have chosen to

say scribbled instead of wrote, or notes instead of letters. Syntactically also, the speaker may exercise a certain amount of choice; he might have produced a passive or a cleft sentence, for example, instead of a basic active sentence.

But, these choices having been made, the speaker has no choice about whether or not he will express such concepts as tense and number linguistically. The English speaker must indicate that the event took place in the past, using wrote rather than writes or is writing. He must indicate that more than one letter was written, by means of the plural -s on letters. These pieces of information are obligatory; if he omits them, he is being either inaccurate or ungrammatical.

Exactly which information is obligatory varies from language to language. As Nida (1964; 196) says: "...languages differ more radically in what they must say than in what they can say..." That is, speakers of any language are able any concept, if necessary (Keenan, 1978), although they will find some concepts less verbalizable than others (Clark & Clark, 1977). But languages differ with respect to which concepts must be expressed linguistically. These required concepts are usually expressed by morphological means.

In English, as we have seen, tense and number are required information; in other languages, these concepts may be expressed optionally or not at all, while other information may be obligatory. There is a wide variety of features that are obligatory in some languages, optional in others. In addition to tense and number, gender, aspect, mood, and case are familiar in Indo-European languages. Other languages may require that, for example, whether a person spoken of is alive or dead be marked linguistically (Nida, 1964; Nida & Taber, 1969).

When translating from a language in which a given distinction is not obligatory into one in which it is, one may be forced to add information to the text. When translating in the opposite direction, one may be forced to omit information in the interests of producing an adequate translation.

In German, for example, nouns denoting occupations must be marked for biological (as opposed to grammatical) gender; this is rarely the case in English. A sentence such as (15a) must be translated into English as (15b).

15a. Hans hat eine Ärztin angerufen
b. Hans phoned a doctor

If this is a single-sentence text, there is no way of retaining the information that the doctor is female while producing an adequate English translation. There is no word *doctoress in English, nor is it open to the translator to produce (16):

16. Hans phoned a female doctor

That would create an impression of peculiarity which is lacking in the original; like example (8b), it is a "drastic departure" from English speech habits. It would only be suitable if a comparison

were being made between male and female doctors. This is not true of the original.

An example in which translation from German into English can result in a gain of information concerns the marking of the habitual and progressive aspects of verbs. In English the distinction is obligatory; in German it is not, as (17) shows:

17a. Annemarie raucht
b. Annemarie smokes
c. Annemarie is smoking

The German verb form does not indicate whether the action is a habitual one, or whether it is in progress at the time referred to. Thus, translation into English results in a gain of information. In a case like (17), where there are no contextual clues, the translator must decide arbitrarily which English form to choose. As in the case of (10), he risks going against the original text-producer's intentions.

5. Translation and Linguistic Relativity

Translation problems such as those discussed here, in which the production of an adequate translation necessitates the gain or loss of information, are of considerable relevance to the Linguistic Relativity Theory. The claim of this theory, that languages classsify and segment the world differently, relies for evidence on the comparison of equivalent structures in various languages. Translation provides the opportunity for such comparison; indeed, it is difficult for the translator to avoid it. While making a translation, one soon realizes that a given concept is expressed in one way in Language A, in a completely different way in Language B. Structures that are translation equivalents but that differ in some fundamental way serve as evidence of linguistic relativity. There is no point in finding differences in structures that are not functionally equivalent.

Structures that pose problems for translators provide concrete proof that two languages are encoding a particular situation differently. Information loss and gain are examples of the highest level of difference: where one language cannot encode without difficulty information that is required or easily codable in another.

These areas of language difference are areas in which evidence of differences in the habitual thought patterns of the languages' speakers might be looked for (Cf. Whorf, 1963). Possibly speakers who are forced to mark a particular distinction linguistically would be more likely to be aware of that distinction in the real world than speakers of a language in which it was not encoded (Carroll, 1963). Translation problems indicate where these cognitive differences might be found.

6. Text Length

In any discussion about the gain and loss of information during translation, the length of the text to be translated must be taken into consideration. The longer the text, the less likely it is

that information will be omitted from or added to it.

The redundancy inherent in natural language ensures that a given piece of information is often encoded more than once in a text of any length. Thus, information that cannot be encoded in one particular sentence or section of a translation may be codable elsewhere. And information added to a given sentence is not necessarily added to the text as a whole. But although longer texts are less likely than single sentences (such as the examples in this paper) to gain or lose information during translation, they are not immune; texts of any length can undergo the process.

6. Summary

The goal of translators is to produce adequate translations. Cases of information gain and loss during translation are evidence that an adequate translation cannot always be exact. These are cases in which the production of an exact translation-- one conveying all and only the information conveyed by the original-- would result in anomalous and therefore inadequate Target Language text. Such cases suggest, in fact, that exactness is attainable in only a minority of translations.

Many cases of information loss or gain stem from the fact that languages differ according to which information must obligatorily be encoded. What is required in one language may be nearly unverbalizable in another. Such cases indicate where cognitive differences between speakers of different languages might be looked for.

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QUELLE THEORIE SEMANTIQUE POUR LA TRADUCTION?

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Si de nombreux domaines de la linguistique peuvent se passer d'une théorie sémantique ou demander à la théorie sémantique qu'elle permette uniquement de faire la discrimination entre les différentes composantes de la langue, il n'en va pas de même pour la branche de la linguistique qui s'occupe de la traduction. La traduction, en effet, part d'un sens exprimé dans une langue pour aboutir à un sens exprimé dans une autre langue (Vinay et Darbelnet, 1958). Le sens est à la fois la matière, la finalité et l'étalon de mesure des équivalences recherchées par l'opération traduisante. C'est pourquoi la théorie de la traduction se doit d'élaborer des concepts théoriques poussés sur le plan sémantique, susceptibles d'éclairer les problèmes sémantiques que d'autres branches de la linguistique négligent - soit parce qu'elles les considèrent comme irréductibles à toute théorisation, soit parce qu'elles peuvent opérer leurs descriptions sans s'appuyer sur une théorie sémantique.

La problématique sémantique de la traduction tourne évidemment autour du concept d'équivalence. Mais que veut dire équivalence? Pour la traduction, équivalence ne veut pas dire identité. Deux énoncés, deux segments d'énoncé, deux mots peuvent très bien être équivalents dans un texte donné sans présenter pour autant une quelconque identité, ni même une quelconque analogie si on les compare de langue à langue (p. ex. "How do you do?" = "Enchanté, Madame").

C'est ainsi que si l'on compare le mot smooth dans le texte anglais suivant (Delisle, 1980):

> The EEL's surface is perfectly smooth with the forward diving planes, rear rudder, radio and sonar bubbles as the only protrusions

avec le mot hydrodynamique par lequel smooth est rendu dans la traduction française de ce texte:

> On a donné au EEL une forme parfaitement hydrodynamique: seuls les ailerons avant de plongée, le gouvernail et les dômes logeant la radio et le sonar font saillie

on verra que leur équivalence ne se mesure pas par rapport aux aires sémantiques qui sont attribués à ces mots dans les dictionnaires. Ces mots sont à la fois équivalents et non équivalents.

Ils ne sont pas équivalents si on les considère isolément de ce texte, c'est-à-dire si on cherche quels traits sémantiques les décrivent dans leurs langues respectives. Ainsi, l'analyse componentielle du mot smooth révélerait les composantes sémantiques suivantes: 1. even; 2. without resistance to anything around it; 3 free from all that would obstruct or impede; 4. related primarily to surface; 5. related also to persons (behaviour, movement) and to moving objects. Or l'analyse componentielle du mot français hydrodynamique donnerait les composantes suivantes: 1. relatif aux mouvements des liquides; 2. relatif aux résistances que les liquides opposent aux corps qui se meuvent par rapport à eux. Il y a donc peu de rapprochement évident entre smooth et hydrodynamique et il ne viendrait, en effet, à l'idée d'aucun lexicologue de comparer ces deux mots, tant leurs contenus sémantiques paraissent éloignés.

Mais nous prétendons, comme le fait Jean Delisle (1980), que ces deux mots sont équivalents dans les textes considérés, dans la mesure où le lecteur de la traduction reçoit une information équivalente par rapport aux constituants verbaux (contextes) du texte original, et par rapport aux autres informations véhiculées par ce dernier en fonction de la situation extra-linguistique dans laquelle il s'inscrit. L'information véhiculée par les deux textes se résume comme suit: le EEL, un sous-marin, est construit de telle façon qu'il glisse bien dans l'eau. Smooth, utilisé dans le texte anglais pour décrire la construction, prend dans le message où il est inséré un sens particulier à cause des mots de son entourage "qui déteignent sur lui pour ainsi dire", comme l'indique Jean Delisle (1980), et peut ainsi être traduit par hydrodynamique, qui devient son équivalent dans ce texte.

Si le sémanticien et le lexicologue considèrent ces deux mots comme non équivalents, c'est qu'ils comparent les mots de deux langues sur la base des valeurs sémantiques que les mots portent en eux de manière constante et évidente, indépendamment des textes dans lesquels ils sont insérés. Si, d'autre part, le traducteur accepte smooth et hydrodynamique comme équivalents dans les textes étudiés, c'est qu'il compare les mots sur la base des valeurs sémantiques qu'ils acquièrent dans les textes par rapport aux autres mots de ces textes et aux conditions situationnelles de production de ces textes. Et si la théorie sémantique veut expliquer ce qui se passe dans la traduction, c'est-à-dire comment le non-identique en langue peut être équivalent en discours, elle se doit de séparer les deux composantes de ce que la langue courante appelle "le sens".

C'est pourquoi nous faisons usage d'une distinction terminologique stricte pour dénommer ces deux ordres de phénomènes. Nous utilisons le terme SENS uniquement pour faire référence à la valeur sémantique qu'acquiert un signe linguistique (ou un ensemble de signes) dans un message donné, et nous utilisons le terme saussurien de SIGNIFIE pour faire référence aux valeurs sémantiques qui sont attachées au signe de manière abstraite à l'intérieur du système de la langue. Ce ne sont que ces dernières valeurs qui sont généralement étudiées sous le nom de sémantique.

Or, ce sont deux choses différentes que de considérer le problème de l'équivalence au niveau des signifiés ou au niveau du sens.

Si nous considérons maintenant ce problème de l'équivalence des signifiés, nous verrons qu'il existe bien peu de signes équivalents d'une langue à une autre, même entre deux langues proches comme le sont le français et l'anglais. En dehors de quelques termes techniques ou scientifiques à l'usage strictement circonscrit à un domaine (laser, radiographie, épithélium, etc.), l'immense majorité des signes de deux langues ne sont pas équivalents, même s'ils sont échangeables comme équivalents de traduction dans des conditions données. Que nous révèle, en effet, l'étude sémantique comparée de deux langues? Tout d'abord que la majeure partie des signes (ou structures syntaxiques) des langues ne sont pas univoques du point de vue sémantique, mais au contraire désignent des réalités multiples et même souvent fort différentes, bref qu'ils sont polysémiques. Du point de vue de la traduction, la polysémie correspond à une

non-équivalence absolue puisqu'il s'avère que les signes qu'on peut comparer dans deux langues différentes ne sont à peu près jamais polysémiques de manière identique; c'est-à-dire que l'ensemble de concepts désigné par un signe d'une langue ne trouve pas son équivalent dans un autre ensemble de concepts désigné par un mot de l'autre langue auquel on pourra le comparer.

Pour illustrer cette non-équivalence due à la polysémie, prenons quelques exemples facilement identifiables par tout bilingue français-anglais: le mot terre peut être échangé contre le mot anglais land pour désigner un espace géographique à cultiver, mais ne peut pas lui être substitué dans d'autres acceptions puisque le mot français terre désigne aussi la planète sur laquelle nous vivons (earth), les minéraux qui la recouvrent (earth, soil), le sol que les forces de la gravitation universelle nous obligent à considérer comme étant à l'opposé de haut (ground), toutes notions qui ne sont pas en anglais normalement désignées par le mot land. Mais land, de son côté, désigne des notions que le mot français terre ne désigne pas (par exemple, la notion de surface géographique définie non pas spatialement mais politiquement ou affectivement et que le français désigne par pays ou contrée). Bref, ces deux termes ne sont pas "équivalents" parce que leurs signifiés constituent des ensembles de notions ayant seulement un ou deux points d'intersection.

De même, sur le plan grammatical, la structure anglaise Nom épithète + Nom substantif, comme dans "a wood stove", est susceptible de trouver son équivalent dans la structure française Nom substantif + Préposition à + Nom épithète, comme dans "un poêle à bois". Mais cette équivalence disparaît si on essaie d'appliquer cette règle de conversion à: an iron stove= *un poêle à fer ou à: a kitchen stove = *un poêle à cuisine. L'inadéquation de l'équivalence n'est pas seulement grammaticale, elle est surtout sémantique. Elle est due à la polysémie de la structure anglaise Nom épithète + Nom substantif.

Pour le linguiste, la polysémie présente un intérêt capital, car elle fait apparaître des caractéristiques essentielles du signifié et, par là, oriente la recherche sémantique. Pour le traducteur, en revanche, elle est d'une moindre importance, car les contextes ont pour effet de faire disparaître la polysémie (donc l'ambiguïté virtuelle) inhérente à toute structure et à tout signe linguistique de la

conscience claire du sujet parlant ou du traducteur. La polysémie n'est donc pas un handicap très grave pour la traduction.

Mais la traduction, plus que toute autre activité linguistique, fait apparaître le rôle immense joué par la polysémie dans le système sémantique de la langue. Elle fait ressortir la non-coincidence des polysémies des signes de langues différentes, attirant ainsi l'attention sur la nature profonde des structures sémantiques de ces langues et sur la nature de l'équivalence établie entre ces signes. Même considérés dans un contexte donné, et en faisant abstraction des autres composantes de leur polysémie, deux signes considérés comme équivalents du point de vue de la réalité qu'ils désignent sont équivalents sans pour autant être identiques dans leur définition sémantique.

On pourra , par exemple, avoir l'illusion que, dans un contexte comme "le prix de la terre en France a augmenté considérablement à cause de la spéculation", terre et land, retenus comme équivalents de traduction, se définissent sémantiquement comme identiques (la seule différence restant leurs distributions différentes dans des contextes différents).C'est cependant oublier l'essentiel, à savoir que, en raison de leur polysémie intrinsèque, ces mots sont porteurs chacun d'une valeur sémantique qui leur est propre et qui est intransférable de l'un à l'autre. Si la notion de "surface cultivable" est identiquement désignée par terre et land dans le contexte ci-dessus, elle n'est cependant pas signifiée de la même façon. Ce n'est pas un paradoxe, mais la conclusion à laquelle doit logiquement nous mener toute analyse sémantique comparative: derrière la polysémie se profile en effet le système propre de chacune des langues, selon lequel l'univers sémantique est structuré différemment en anglais et en français. Le temps manque ici pour aborder comme il le faudrait cette question cruciale. Essayons cependant de faire apparaître la différence entre les deux composantes du signifié à partir des deux exemples utilisés plus haut dans cet exposé.

Un rapide examen comparatif de la polysémie du mot français terre et du mot anglais land fait apparaître non seulement que chacun d'eux a sa polysémie propre, mais aussi que la polysémie de chacun est organisée autour d'un "axe" sémantique qui lui confère une unité interne. La polysémie de chaque terme n'est pas le fruit du hasard mais le résultat d'une structuration sur la base d'un trait sémantique minimal commun aux différentes acceptions.

Dans le cas de land cette constante est la notion de "surface" (qu'il s'agisse d'une surface saisie sous l'angle de l'espace purement physique ou de l'espace humain ou humanisé). Cette constante sémantique exclut que land puisse désigner la planète ou la matière "terre" (earth). Par contre le mot français terre s'applique à un ensemble de notions aussi bien spatiales que non spatiales désignant à la fois la planète, le matériau qui la constitue aux yeux de ses habitants et une portion de cette planète: il est évident que le trait commun à ces différentes acceptions n'est pas la notion de surface, mais bien la notion même de matière minérale constitutive, totalement ou partiellement, de ces diverses réalités appréhendées à travers le mot. Nous avons exposé par ailleurs (Pergnier, 1978) comment et pourquoi ces traits sémantiques minimaux appelés "signification" se constituaient sur la base des relations entre les signes de la langue et comme résultat de leurs "oppositions". Nous ne pouvons nous y arrêter longuement ici. Nous nous contenterons de faire apercevoir que cette "signification", qui est présente derrière chaque acception (désignation) du mot, est proprement intraduisible, car elle n'appartient pas à l'univers désigné par les mots : elle appartient au système sémantique sous-jacent, qui reste inconscient et implicite pour l'utilisateur. La traduction opère au seul niveau "explicite", qui est celui du rapport existant d'une part entre le signe et les réalités extra-linguistiques, et d'autre part entre le signe et les autres signes présents dans le texte.

Les structures linguistiques (lexicales ou grammaticales) sont plus remarquables, sémantiquement parlant, par ce qu'elles "ne disent pas" que par ce qu'elles "disent". La polysémie est la manifestation d'une non-distinction formelle entre des concepts cependant distincts pour l'utilisateur de la langue, ou, si l'on préfère, d'une indifférenciation du différent. Le fait que le français ne distingue pas entre la planète "terre", la matière "terre", l'espace "terre", là où l'anglais distingue par des mots différents, est ce qui caractérise en propre le signe terre dans son système lexical, par rapport à d'autres signes de la même langue ou par rapport à d'autres signes d'une autre langue.

De même, si " a wood stove" est un "poêle à bois" (brûlant du bois) et "an iron stove" est un "poêle en fer" (construit avec du fer), la grammaire n'y est pour rien. Il serait faux de dire que le syntagme Nom épithète + Nom substantif "exprime ces

deux types de relations sémantiques" (comme il en exprime d'autres: a kitchen stove = destination; a mountain stove = origine, etc.). En vérité, si cette forme syntaxique est apte à les exprimer, c'est justement qu'elle n'exprime rien - positivement - quant à la relation sémantico-logique qu'entretiennent les signifiés des deux noms. C'est dans le vide sémantique de la langue (dans l'indifférenciation) que s'inscrit la relation sémantico-logique positive, qui ne doit rien à la grammaire, mais tout à la connaissance extra-linguistique de l'utilisateur de cette grammaire. Un sujet anglophone qui n'aurait aucune connaissance concrète des réalités du feu pourrait virtuellement interpréter "an iron stove" comme un poêle brûlant du métal et "a wood stove" comme un poêle construit avec du bois pour brûler d'autres matériaux. Sa "compétence linguistique" ne serait pas en défaut, mais seulement sa connaissance de la physique pratique ou son bon sens. Le syntagme en question n'exprime nullement la relation sémantique entre les deux noms. Il exprime seulement la relation de "qualifiant à qualifié". C'est là sa seule signification, au sens défini plus haut. Il est évident que cette "signification" n'a pas son équivalent en français puisque, dans cette langue, une partie de l'expression de la relation est prise en charge par les prépositions.

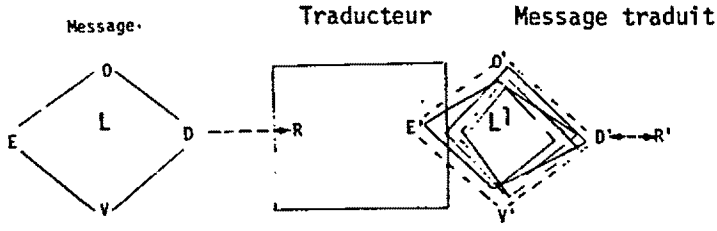
La machine à traduire risque d'être prise en défaut par ces deux cas précis pour établir des équivalences car, contrairement au traducteur humain, elle n'a pas à sa disposition les connaissances extra-linguistiques qui guident les choix face à la polysémie - c'est-à-dire, face à la pluralité d'interprétations possibles de chaque signe ou de chaque structure syntaxique. La machine à traduire fonctionne surtout au niveau du signifié, qui est le résultat d'une dialectique entre l'univers formel, systématique, réducteur, de la signification, et l'univers conceptuel de la désignation. Cette double nature du signifié, aussi indispensable à l'exercice de la pensée et de la communication que la vision binoculaire l'est à la perception en trois dimensions, pose un obstacle à la recherche des équivalences entre les signes de deux langues.

Elle n'est cependant pas un obstacle à la traduisibilité, car la traduction - la vraie traduction - n'est pas la recherche d'équivalences entre des signes de deux langues - comme l'est, par exemple, l'établissement d'un dictionnaire bilingue. La traduction n'opère pas sur des significations, qu'en

tout état de cause elle laisse volontairement intraduites; elle n'opère même pas sur des "désignations" de mots: elle opère sur des messages, donc sur des mots inscrits dans une situation globale de parole. Autrement dit, selon notre première définition, elle opère sur le sens, qui est une réalité distincte du signifié et sur lequel il est maintenant nécessaire de revenir.

Le sens d'un énoncé, ou le message, est médiatisé par les structures de la langue (et donc, par les signifiés qui font partie du système linguistique). Mais le sens d'un énoncé n'est pas équivalent à la somme des signifiés qui composent son énonciation, car il est étroitement solidaire des conditions de son émission. La situation d'émission, qui confère son sens à l'énoncé et conditionne son énonciation, comprend quatre paramètres: l'émetteur, l'objet, le destinataire et le vecteur (Pergnier, 1978). L'émetteur est celui qui a quelque chose à dire (=le vouloir-dire), qu'il énonce en fonction de ses propres connaissances linguistiques et de son rapport à l'objet et au destinataire du message. Du point de vue de l'objet, l'énonciation consiste à désigner au moyen des mots considérés comme les plus adéquats ce dont l'émetteur parle. Pour s'assurer d'être compris, l'émetteur adapte généralement son message en fonction de son destinataire. Il se peut aussi que l'énonciation soit affectée par le vecteur, c'est-à-dire les conditions spatio-temporelles. C'est la mise en jeu de ces quatre paramètres qui fait que l'énoncé ne reste pas seulement un texte d'une langue donnée (c'est-à-dire une chaîne verbale engendrée par un système linguistique, dont chaque signe a un signifié mais pas véritablement de sens), mais devient un message, communique un sens.

C'est sur cet énoncé-message, sur le sens, qu'opère le traducteur, et non sur l'énoncé-texte. Pour saisir le message en tant que récepteur de l'original, il doit se référer aux paramètres situationnels qui ont influencé l'énonciation de l'original. En reproduisant ce message dans une autre langue, en tant qu'émetteur, il est lui-même influencé par les paramètres situationnels, qui ne sont pas nécessairement les mêmes que ceux qui ont conditionné l'énonciation du texte de départ, car la situation d'émission change. On peut présenter comme suit l'opération traduisante:



(Ligne en pointillé: l'idéal visé par le traducteur)

(Roberts, 1981)

Ce diagramme révèle, peut-être plus clairement que ne le font les mots, les conclusions suivantes:

(1) Les structures de la langue, donc les signifiés, jouent inévitablement un rôle dans la traduction, car la traduction met en cause des langues. Ainsi, pour traduire le mot smooth par le mot hydrodynamique, il faut que le traducteur connaisse les désignations courantes de smooth et qu'il ait l'intuition des possibilités d'exploitation du mot. Mais les problèmes du signifié restent, néanmoins, mineurs dans la traduction, car celle-ci opère non sur les signifiés proprement dits, mais sur le sens, sur le message, qui n'est que médiatisé par la langue.

(2) Le sens est le résultat de l'intervention des facteurs situationnels, qui transforment un énoncé-texte en énoncé-message et qui délestent l'énoncé des ambiguïtés virtuelles pour faire apparaître un sens clair et précis.

(3) Le traducteur peut arriver à communiquer ce sens dans une autre langue. Cependant, le sens présenté dans l'autre langue sera équivalent plutôt qu'identique. Si l'identité est le but recherché par l'opération traduisante, elle court vers l'échec dans la plupart des cas. Car, dans le processus de la traduction, il y a changement non seulement de langue, mais aussi de paramètres situationnels.

La traduction, décrite par I.A. Richards (1953) comme "probably the most complex type of event in the evolution of the cosmos", est néanmoins possible si l'on ne s'attend pas à l'identité mais qu'on se contente de l'équivalence, si l'on ne la considère pas comme une opération sur les langues mais comme une opération sur les messages, bref, si l'on fait une distinction nette entre le signifié et le sens.

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VIII

SOCIOLINGUISTICS, PSYCHOLINGUISTICS, NEUROLINGUISTICS

SLANG: DEVIATION OR NORM

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The prevailing assessment among linguists and laypeople alike is that slang is in some unclear way a departure from normal language, some type of specialized or peripheral portion of language. As a non-essential component of language, slang is rarely viewed as simply an extra but usually as either an adornment or a parasite. A survey of writings about English slang confirms not only the marginal status accorded to slang but also the opposing values associated with this status.

Attitudes about English slang from the 17th century through the middle of the 1930's can be inferred from the entries in W. J. Burke's The Literature of Slang (1939), an excellent annotated bibliography of writings about English slang, cant, and jargon. A sampling of the titles from one page of the bibliography (p. 20) can give the flavor: A grammatical corrector; or Vocabulary of the common errors of speech (Philadelphia 1848); The Yankee tongue --and its corruptions (New York 1843); Five hundred mistakes of daily occurrence in speaking, pronouncing, and writing the English language, corrected (New York 1856); Modern English literature: its blemishes and defects (London 1857). In these works slang is at odds with good grammar and social respectability, an instrument of moral and mental depravity. In others, like Walt Whitman's often quoted "Slang in America" (1885), slang is the proof of vitality and vision in the people and the language. It must be remembered that Burke's bibliography is almost a half-century old and predates the influence of descriptive linguistics.

More recent scholarly references to slang have of course shed the overtly proscriptive goals of most of the works included in Burke. But the view of slang as marginal to ordinary language and to the important questions of scientific language study persists, showing up in two separate ways: 1) brevity of treatment of the topic; 2) inferior status imputed to the use of slang.

Most general introductions to the scientific study of language mention slang only in passing, if at all. Bloomfield (1933), Hockett (1958), Gleason (1961), and Lehmann (1976) all together devote fewer than five pages to slang. The most recent large reference grammar of contemporary English (Quirk et al 1972) puts slang in a footnote. Histories of the English language give slang a bit more attention, for the lexicon has long been an important part of diachronic studies. The fullest treatment I find is the eleven page section on slang in the tried and true Robertson and Cassidy textbook (1954, pp. 256-66). Baugh and Cable (1978) give four pages to slang and Pyles and Algeo (1982) and Bolton (1982) a few paragraphs each.

These brief references focus on various characteristics of slang: Bloomfield--connotation; Gleason--ephemerality; Lehmann--group identity and casual style; Pyles and Algeo--casual style and source of new vocabulary; Baugh and Cable--colloquial style; Bolton--ephemerality.

Some convey value judgments, ranging from negative to positive. Schlauch (1959, p. 52) calls slang expressions "aberrations from standard English." Bolton (1982, p. 354) warns that slang "makes a poor choice for the writer who wants to address an audience beyond the time and place in which he writes." Quirk et al put slang, an attitudinal variety, outside the common core of English. Baugh and Cable (p. 314) cautiously hazard that "some use of slang is tolerated in the light conversation of most educated speakers." Hockett is the most positive: "We must not think of such uses of language [slang, etc.] as in any way inferior to its use in writing treatises on bacteriology or delivering lectures on civil law." (p. 294)

The sketchy treatment of slang in general works on language and in histories of the English language is, I think, understandable. First, slang is not needed to construct a grammar from a traditional, structural, or transformational-generative viewpoint. Second, studies of slang have focused almost entirely on the distinctive, creative, idiosyncratic features of a corpus, thus reinforcing the ancillary position of slang and almost guaranteeing the exclusion of the topic in works aimed at making generalizations about language.

The two unrivaled devotees of slang of the twentieth century are Eric Partridge and H. L. Mencken. Interestingly, neither had a British variety of English as his mother tongue, and neither was an academician. Partridge was an indefatigable maker of wordbooks --books of slang, unconventional English, catch phrases, puns, proverbs. His important expository writing on these topics is not so extensive. For slang, Partridge's Slang To-day and Yesterday (1950), which was issued in three editions, is the summa. Together with Mencken's chapter on "American Slang" (1963, pp. 702-61), it is the starting point--and sometimes the ending point--for investigating slang. The chapter on slang in G. L. Brook's Varieties of English (1973), for example, is mainly derivative of Partridge. Partridge was a working lexicographer who obviously took pleasure in discovering, documenting, and preserving words. In the interpretation of data, however, his exuberance is annoying, if not downright suspect, to a linguist in the 1980's. Consider, for example, one of the concluding sentences from Partridge's chapter entitled "The Essence of Slang." "Slang, inherent in human nature, is indicative not only of man's earthiness but of his indomitable spirit: it sets him in his due relation to other men, to Nature, and to the universe." (p. 36) Statements of this sort are associated with non-scientific writing about language and reinforce the tendency to dismiss slang as a little corner of human language suitable only for popular treatment.

The best work in slang has been done in lexicography, but lexicography is itself a field largely neglected by professional

linguists. Three unrelated conferences on lexicography were held between 1960 and 1972, bringing together laborers from all parts of the vineyard--Indo-Europeanists, dialectologists, generative semanticists, phonologists, etc. Of the sixty-eight papers published in the proceedings of these conferences, none is about slang (Householder and Saporta 1975; Weinbrot 1972; McDavid and Duckert 1973).

Despite the lack of interest on the part of linguists slang dictionaries thrive. Partridge's monumental works keep being reissued, as does Wentworth and Flexner's Dictionary of American Slang. And new slang dictionaries keep appearing, e.g., Slang and Euphemism (Spears 1981). Many are filled with valuable and plentiful information about individual entries but lack clearly stated or discoverable guiding principles. For example, The American Dictionary of Colloquial English (Weingarten 1954) contains 390 pages of entries and a one-page foreword. Madeleine Mathiot's review of the 1960 edition of Wentworth and Flexner points to the major shortcoming in the lexicography of slang.

> Flexner's inability to present a well-organized exposition of the theoretical aspects of the field contrasts with the technical competence of the lexicographic work and with the high quality of his observations of pertinent details.... Thus, the book under review is typical of the valuable contributions made by experienced practical workers who intuitively follow good procedure but are unable to sum up their experience in an organized way and often are unaware of the need for it (p. 676).

In his survey of American lexicology since World War II, James B. McMillan identifies definition of class as "the basic problem of slang lexicology."

> Until slang can be objectively identified and segregated (so that dictionaries will not vary widely in labeling particular lexemes and idioms) or until more precise subcategories replace the catchall label SLANG, little can be done to analyze linguistically this kind of lexis, or to study its historical change, or to account for it in sociolinguistic and psycholinguistic contexts (1978, p. 146).

In my opinion, the major stumbling block to a workable definition of slang has been the assumption that slang is peripheral to the language and the consequent strain to give slang an identity apart from and in contrast to a supposedly neutral or written or standard or prestigious or stable variety of the language. Departure from normal language (the assumption) becomes the genus of every definition of slang, and various writers seize on various characteristics of slang as the specific difference.

In an attempt to solve the problem of definition, Bethany Dumas and Jonathan Lighter reject the classical formula for

definition and instead propose four identifying criteria for slang.

> 1. Its presence will markedly lower, at least for the moment, the dignity of formal speech or writing.
> 2. Its use implies the user's special familiarity either with the referent or with the less statusful or less responsible class of people who have such special familiarity and use the term.
> 3. It is a tabooed term in ordinary discourse with persons of higher social status or greater responsibility.
> 4. It is used in place of the well-known conventional synonym, especially in order (a) to protect the user from the discomfort caused by the conventional item or (b) to protect the user from the discomfort or annoyance of further elaboration (pp. 14-16).

"When something fits at least two of the criteria, a linguistically sensitive audience will react to it in a certain way. This reaction, which cannot be measured, is the ultimate identifying characteristic of slang." (p. 16)

Not surprisingly, none of these criteria is formal, and only #3 may be loosely termed semantic. All concern the social relationships of the participants, and the "ultimate identifying characteristic" is the consciousness of shared knowledge between speaker and hearer. Dumas and Lighter's formulation--whether or not helpful to working lexicographers--represents an advance in lexicology.

The attributes of slang that seem so glaring are not unique to slang but represent issues that must be addressed for other reasons in the complete description of a language. Here I will briefly discuss four attributes commonly associated with slang--innovation, ephemerality, group identification, and informality.

Slang is innovative, but so is language in general. Linguistic theory must account for new words in the language--new slang words, new technical words, new words of any kind. There is no evidence that slang is created in special or unfamiliar ways. My work with college slang (Eble, 1980 and 1981) amply illustrates the role of processes like derivation, acronymy, metaphor, and metonymy in the production of slang. Studies of new scientific terms (Caso 1980) and computer terminology (Covington 1981) show the same processes at work in those subject areas. Algeo's study (1980) of one thousand words from The Barnhart Dictionary of New English Since 1963 presents a rigorous taxonomy for lexical innovation which includes with refinements all the familiar morphological and semantic processes and which provides a common vocabulary to compare neologisms from various technical fields and social groups. A recent monograph on lexical innovation in slang, colloquialisms, and casual speech by Karl Sornig (1981) raises a number of theoretically important points but

merely scratches the surface in developing and interrelating them.

New words bombard us every day, and with a few exceptions they feel as comfortable and non-threatening as the words that have been around for generations. I recently overheard a college student ask a group of friends, "You guys goin' beachin'?" I had never heard beach as a verb meaning 'go to the beach'. But I do know party to mean 'go to a party', and I made the analogy effortlessly. Another recent experience with lexical innovation concerned the much-publicized controversy over the amount of pine tar on George Brett's homerun hitting bat--a confrontation immediately called Tar Wars (after Star Wars). A few evenings after the incident I myself used the term in a general conversation about baseball. The person I was talking with knew exactly what I was referring to and with no comment whatsoever about the expression responded immediately with an anecdote about Yankee manager Billy Martin. Readers of Time magazine expect to imbibe a number of neologisms with their weekly dose of current events. Among possible coinages by Time are culturecrats, Disneyfication, ecofreaks, megabuckers, outcumbent, petropolitics, skyjam, and televangelist (Yates 1981). Non-academic neologisms even crop up in scholarly writing. In discussing supercalifragilisticexpialidocious, Algeo (1980, p. 266) says, "... and it, like streaking, became a part of the language with great rapidity and much fanfare, or in the case of streaking perhaps one should say fannyfare." These four examples illustrate that innovation is an important attribute of ordinary, everyday language; insofar as slang is ordinary, everyday language, innovation is an important attribute of slang too.

Ephemerality is often considered a special attribute of slang. But not all slang is ephemeral, and not all ephemeral vocabulary is slang. A comparison of words labelled slang in Webster's Second (1934) and Webster's Third (1961) shows that many slang terms have staying power, among them beef and bitch 'complain', buck 'dollar', bull 'talk insincerely', and come again 'repeat' (Barber 1963, pp. 106-07). Maurer and High (1980, pp. 188-89) find that a number of terms marked slang in Grose's 1785 Classical Dictionary of the Vulgar Tongue are still around and still slang two-hundred years later, e.g., knock off 'to quit work' and plant 'to lay, place, hide'. Many slang terms are of course ephemeral, e.g., twenty-three skidoo, but other kinds of vocabulary are ephemeral too, e.g., victrola, or kernel sentence.

The last two attributes I mention here--group identity and informality--roughly coincide with the four identifying criteria of slang proposed by Dumas and Lighter. They are clearly and properly within the scope of sociolinguistics, though this comparatively new field has not yet given much attention to slang per se. A study of vocabulary levels in Zuni by Newman (1964) poses the interesting question of the existence and role of slang in a small, classless, non-urban society. Laver and Trudgill (1979) do mention slang briefly as "a very powerful social marker." (p. 26) And Halliday's concept of antilanguages (1978) may provide a framework for understanding some of the social complexities of slang.

A relationship between slang and style (or register) seems obvious and has been claimed for years. In "The Five Clocks" (1961) Joos discusses slang as one of the two defining characteristics of the casual style. Brown and Levinson (1978), in their study of politeness phenomena, see slang as an in-group identity marker used as a strategy in claiming common ground (p. 116). The types of sociolinguistic studies which could increase our understanding of slang are too numerous to mention. The sooner students of slang discover sociolinguistics and the sooner sociolinguists discover slang, the better for all of us.

In an educational and cultural tradition which holds up as models of excellence specimens of language which are written, somewhat formal, homogeneous, time-honored, and direct, it is hardly surprising that language which is mainly spoken, informal, varied, new, highly connotative, and often indirect is judged peripheral. But--as Gleason suggests for the language of poetry--perhaps our point of view is wrong. In Gleason's words (1973, p. 32),

> We have taken as normative what is really the anomalous kind of language--legal contracts, examples out of logic texts, and modern descendants from the old classical examples in grammar books. To this core we have added so much of ordinary language as is not distinct from it--or rather, so much of ordinary language as we have not yet noticed to be distinct from it. The malapropisms, poetic figures, popular language play, and ordinary double-talk we hear all around us may after all be the really typifying human language, extreme cases only of the ordinary sort of language.

To Gleason's examples I would add slang. Furthermore, I maintain that a descriptive approach which assumes that slang is an anomaly is bound to be inadequate and a theory of grammar which describes language as if it has no slang is bound to be wrong.

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REGARDS SOCIOLINGUISTIQUES SUR LA LANGUE DU THEATRE DE MICHEL TREMBLAY

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Les critiques littéraires qui ont étudié l'emploi du 'joual' dans le théâtre de Michel Tremblay y ont vu surtout un moyen d'exprimer la réalité sociale, politique et économique des Québécois d'une façon réaliste. Jean-Claude Germain (Préface aux Belles-Soeurs) découvrait dans le 'joual' le seul moyen d'expression possible sur les lèvres des personnages des Belles-Soeurs. Alain Pontaut (Dictionnaire Critique du Théâtre Québécois) admettait que le 'joual' choisi par Tremblay pour ses personnages avait une raison d'être si ces derniers ne voulaient pas sonner faux. Il affirmait qu'il fallait "cesser au Québec ... d'écrire des comédies dans le langage des salons parisiens."

D'autres critiques, plus puristes, s'élevèrent contre l'emploi de cette langue au théâtre et refusèrent d'accepter au rang des écrivains un jeune Québécois qui allait perpétuer par ses écrits la honte qu'ils avaient toujours ressentie d'avoir à admettre que certains d'entre eux parlent mal, ou parlent 'joual'. "Mon Dieu que j'ai donc honte d'eux autres!" dit Lisette de Courval dans les Belles-Soeurs.

Poursuivant son étude des Belles-Soeurs dans sa préface à la même pièce, Jean-Claude Germain lie l'emploi du 'joual' au thème même de toutes les pièces de Tremblay qui selon lui est l'impuissance qu'il qualifie de 'préalable': d'endémique, impuissance contre laquelle "on n'a pas les moyens de vouloir quoique ce soit". A cette impuissance, il rattache le problème de l'incommunicabilité qui à son avis a pour cause le parler même des gens du ghetto. "A l'exception d'une des amies de Germaine qui a acquis un pseudo de vernis en Europe, tout le monde parle la langue du ghetto, le 'joual'. Pour eux l'impuissance n'est pas un problème, c'est une réalité dont ils souffrent et dont ils ne prendront jamais conscience. Jamais, parce que le 'joual' qui est une langue appauvrie et sans pouvoirs hors de la réalité immédiate empêche toute prise de conscience. 'On est cheap' pour eux, c'est le constat d'une réalité irrémédiable. On ne sort pas de ce ghetto-là."

Si cette remarque de Germain est vraie pour les Belles-Soeurs, elle ne va plus pour les deux pièces qui vont suivre: En Pièces Détachées et A Toi pour toujours, ta Marie-Lou. Dans ces pièces, des personnages qui eux aussi parlent 'joual' trouvent une sortie possible de leur "cellule des Tu-seuls", l'un dans la folie,

l'autre dans le suicide et une dernière, Carmen dans A Toi... en devenant une chanteuse de chansons de cowboy au rodéo. Il faut donc conclure que le 'joual' n'empêche pas toute prise de conscience et qu'une fois devenu conscient, même si 'on est cheap' même si on parle mal, on peut quand même être heureux.

1. Le joual et le comique verbal

Si le 'joual' ajoute au réalisme du théâtre de Tremblay et renforce le thème principal de son théâtre qui est l'impuissance de ces personnages à se sortir du ghetto où ils vivent, je crois qu'un rôle plus important encore est qu'il ajoute au comique verbal de ses pièces.

Tremblay, passionné pour le théâtre, était familier avec les pièces de Beckett et d'Ionesco. Pour Ionesco en particulier, le langage devient un objet, et un objet de dérision. Tremblay comme Ionesco fait du langage un objet de théâtre, un personnage, le donne en spectacle, fait qu'il prête à rire. C'est ce qu'a très bien vu Jean-Claude Germain: "On ne s'appitoie pas sur les personnages de Tremblay, dit-il, on rit d'eux, on ne rit pas de ce qu'ils disent, on rit de la façon dont ils le disent."

On pourrait répondre à l'assertion que le 'joual' a été employé par Tremblay pour faire de la langue l'objet du rire des spectateurs, qu'il aurait pu arriver au même résultat en écrivant en français correct. Ionesco et Beckett ne l'ont-ils pas fait? Mais ces derniers ont dû employer des procédés linguistiques abstraits et artificiels pour atteindre leur but. Tremblay a eu le génie de comprendre que, tel qu'il existait, dans son habit de tous les jours, le 'joual' se prêtait très bien à l'expression du message de son théâtre. Mais il voulait aussi que son théâtre fût comique. Or la situation dans laquelle il plaçait ses personnages était loin d'être comique. Elle était absurde peut-être, mais fort peu comique. Il lui fallait donc trouver un moyen de faire rire ses auditeurs tout en leur ouvrant le gouffre béant de leur néant. Ce moyen Tremblay l'a trouvé dans le 'joual' qu'il connaît si bien et qu'il a mis de façon réaliste dans la bouche de ses personnages. On pourrait appliquer à Tremblay ce que dit Michel Corvin d'Adamov dans Le Théâtre nouveau en France: "Il fait coïncider ses personnages avec leur langage; ils n'ont d'autre épaisseur que celle de leurs paroles."

Parmi les procédés stylistiques qu'Ionesco a employés dans son théâtre pour faire de la langue un objet de dérision et que Tremblay a trouvés déjà tout faits dans le 'joual' qu'il a utilisé dans ses pièces,soulignons l'emploi fréquent du monologue (signe frappant de l'absence de communication), l'emploi de clichés, de sacres, d'aphorismes, de répétitions et d'énumérations. On peut relier les procédés de la répétition et de l'énumération chez Tremblay à la technique de la prolifération d'Ionesco. On remarque aussi dans le 'joual' de Tremblay, comme dans la langue

d'Ionesco, l'emploi de la tautologie et de platitudes qui prennent la forme de pléonasmes, d'exagérations, d'assertions naïves et évidentes, d'associations ridicules et de phrases contradictoires.

2. Le joual et la révolte verbale

Le 'joual' est plus qu'un objet du rire dans le théâtre de Tremblay. Il est l'outil nécessaire à l'expression de la révolte de ses personnages contre les autres membres de la société montréalaise où ils évoluent, ceux qui ne parlent pas joual. Pour exprimer cette révolte verbale, Tremblay aurait bien pu choisir le français correct. Mais se révolter verbalement dans la langue de ceux contre qui on se révolte n'est-ce point déjà accepter un peu leur manière de penser et d'agir, n'est-ce pas être déjà un peu moins révolté? Tremblay a choisi le 'joual' comme un code qui permettrait à ses personnages de narguer l'ennemi en arrivant à s'exprimer et à évoluer socialement sans l'usage de sa langue.

A l'encontre de Jacques Brault (L'Affaire des deux langues) qui voyait dans le 'joual' "une parole sans fondement, une langue sans exercice, un langage d'agonie prolongée". Tremblay a découvert dans le 'joual' le langage le plus apte à l'expression de la révolte verbale de ses personnages.

2.1 Le joual et les snobs intellectuels

Parmi ceux contre qui les joualisants dirigent leur révolte, il y a ces gens qui, ayant été élevés dans le ghetto, en sont sortis grâce à l'instruction et qui ne parlent plus joual. Ils sont, pour ceux du ghetto, des snobs intellectuels, des traîtres qui sont passés au rang des étrangers. Nous avons un exemple de ce que ceux du ghetto considèrent du snobisme intellectuel dans la personne du petit Raymond de Gabrielle Jodoin dans les Belles-Soeurs:

> "Parlez-moé-s-en pas! C'est plus vivable chez nous! Depuis qu'y a commencé son cours classique, là, mon p'tit Raymond y'a changé. C'est ben effrayant! On le r'connaît pus! Y lève quasiment le nez sur nous autres! V'la rendu qu'y nous parle latin à table ... Parce qu'y apprend toutes sortes de folleries au collège, là y nous méprise!"

Et ce mépris venant de l'un des leurs est encore plus difficile à accepter que s'il venait de l'extérieur.

2.2 Le joual et les étrangers

Un autre groupe qui fait l'objet de la révolte verbale de ceux qui parlent le 'joual' ce sont les étrangers, les Européens, les Français, ceux qui sont différents, qu'on ne comprend pas et qu'on ne veut pas comprendre; ceux qui ne parlent pas comme eux.

"Tout ce qui dépasse le pas de ta porte, tu le comprends pas, t'essayes même pas de le comprendre, pis tu t'arranges pour l'interpréter de travers," dit Carmen à Manon dans A toi...

Dans les Belles-Soeurs, Tremblay a fait de Lisette de Courval, surtout dans le domaine de la langue, le porte-parole des Européens et en particulier des Français. Elle est la seule qui va faire mention de l'Europe dans la pièce et les autres vont en profiter pour se moquer de l'Europe et des Européens vivant à Montréal, chaque fois que l'occasion s'en présente. Ainsi parlant de leur hygiène, Lisette de Courval dit:

	D'ailleurs en Europe, le monde se lavent pas.
Des-Neiges Verrette:	Prenez l'Italienne à côté de chez nous, a pue c'te femme là, c'est pas croyable.
Lisette de Courval:	C'monde là, là, ça porte pas de sous-vêtements. La pudeur, y connaissent pas ça, les Européens.

Mais dans le domaine linguistique, Lisette de Courval qui a poli sa langue au contact des Français est mal acceptée de ses compagnes et fait souvent l'objet de leur ridicule.

Rose Ouimet (parlant de Lisette):	La v'la qui recommence avec son Europe, elle! Ca va être beau! On n'a pour toute la soirée, certain.
Gabrielle Jodoin:	R'garde la de Courval qui continue à coller ses timbres ... la maudite pincée, on n'est pas assez intéressantes pour elle je suppose!
Lisette de Courval:	A Paris, tout le monde perle bien, c'est du vrai français partout ... C'est pas comme icitte ... j'les méprise toutes! ... C'est du monde cheap ... mon Dieu que j'ai donc honte d'eux autres!

On le voit, ici, dans les Belles-Soeurs, sans l'emploi du 'joual' la révolte verbale des joualisants contre les Français représentés par Lisette de Courval, n'aurait pas été aussi efficace.

Dans En Pièces Détachées, c'est par la bouche de Thérèse et dans son 'joual' que Tremblay exprime la révolte verbale de ceux qui parlent joual contre le français correct et les Français. Si

Tremblay avait fait parler Thérèse en francais correct, cette situation n'aurait pas pu se produire:

> "Pis à part de ça, lui, là, c'tait un petit Français, t'sais le p'tit Français, cheap, là, qu'y a pas une cenne en avant de lui, mais toute la France en arrière! Y parlait pas, y baragouinait! On n'est pas à Paris, icitte ... J'y ai dit dans mon meilleur français: 'Pourreriez-vous répéter, s'il vous plaît, j'ai pas compris'. Y prend un air pincé ma petite fille, pis y me dit: 'J'vous ai demandé un thé, mademoiselle, un thé! T-H-E, thé!' Ah! ben là, par exemple, me vl'a en beau crisse! 'Aie, tit-boute, que j'y ai dit, tu viendras pas me montrer comment épeler thé icitte, okay? R'garde moé, r'garde-moi, ben, là ... comme chus là, là mon p'tit gars, j'ai été à l'école aussi longtemps, pis peut-être plus longtemps que toé en France, ça fait que tu viendras pas me montrer comment épeler thé en pleine face,"

3. Le joual et la sexualité

Au Québec, le premier contact que les gens du ghetto ont avec une langue qui est autre que leur joual, c'est à l'église avec les prêtres et à l'école avec les religieuses et les frères enseignants. Puis à la télévision et au cinéma, ils apprennent à connaître les acteurs français qui à cause de leur langue et de leur apparence physique leur semblent bien peu virils. L'association est vite faite entre les gens qui ont dit non à la vie sexuelle et leur langue correcte, et ceux qui leur semblent efféminés et leur français correct. De là, pour eux à faire l'association entre le parler standard et la perversion sexuelle, il n'y a qu'un pas à franchir. Et c'est ce qui est arrivé au Québec où très souvent l'homme qui parle un français correct est tout de suite classé parmi les homosexuels. La jeune fille dont le parler est grammatical passe, elle, bien souvent, pour une ex-soeur ou une puritaine.

Cette situation sexguistique(Jacques Godbout, L'affaire des deux langues), Tremblay n'a pas manqué de l'observer et d'en faire le sujet de son théâtre. Dans les Belles-Soeurs, en parlant des Français, Rose Ouimet nous dit: "Les Français, c'est toute des p'tits bas-cul qui me viennent même pas à l'épaule! Pis y sont ben que trop efféminés! Y'ont toute l'air de vraies femmes!"

Lisette de Courval, qui comme nous l'avons déjà vu, parle un français qui sans être des plus corrects, est tout de même plus grammatical que celui de ses compagnes, est la seule qui soit scandalisée lorsque Des-Neiges Verette raconte l'histoire de la bonne soeur qui s'est fait violer:

> " ... c'tait une religieuse qui s'était faite violer dans une ruelle ... Ca fait que le lendemain, on l'a retrouvée dans le fond d'une cours, toute efouerrée, la robe r'montée par dessus la tête ... A gémissait sans bon sens, vous comprenez ... Ca fait qu'y'a un journaliste qui s'approche pis qui y demande: 'Pourriez-vous ma soeur nous donner quelques impressions sur la chose horrible qui vient de vous arriver?' Ca fait que la soeur ouvre les yeux pis murmure: 'Encore! Encore!"

La note que Tremblay donne au metteur en scène est que "Toutes les femmes éclatent de rire, sauf Lisette de Courval qui semble scandalisée." (Belles-Soeurs) Pourquoi Lisette de Courval serait-elle plus scandalisée que les autres personnages? C'est parce qu'elle passe pour puritaine parlant un français plus correct.

Dans En Pièces Détachées, ce sont les frères qui font l'objet de l'attaque sexguistique de Tremblay. Voici ce que dit Marcel du frère qui s'occupe de lui à l'asile:

> "Pis m'as te mettre ma main su'a'yeule, maudite corneille! Maudite corneille! T'es rien qu'une maudite corneille, frère-mets-ta-main!"

C'est à la dernière expression de Marcel que je fais allusion ici: "Frère-mets-ta-main!" A remarquer que le mot frère selon l'orthographe de Tremblay doit être prononcé /frɛr/, ce qui est la prononciation standard et non /frer/, ce qui serait la prononciation dialectale du même mot. On voit que Tremblay a réussi à réunir dans une seule expression l'élément linguistique 'frère' et l'élément sexuel 'mets-ta-main' et de faire encore une fois d'une situation sexguistique le sujet de son théâtre.

Dans son roman C't'a Ton Tour, Laura Cadieux, Tremblay poursuit son analogie entre le sexe et le français correct. Au moment où le vieux garçon Oscar Blanchette fait son entrée dans la salle d'attente du médecin génycologue, et qu'il salue les religieuses et deux Grecques qui sont assises dans le petit salon, Laura Cadieux nous dit: "Les Grecques y 'ont répondu en grec, pis les soeurs en soeur." Lucille Bolduc avait déjà fait dans le même roman cette remarque désobligeante concernant les religieuses:

> "Vous trouvez pas, vous autres, que depuis qu'y'essayent de se déguiser en monde, y'ont toutes l'air des femmes aux femmes, les soeurs'"

Quand à Oscar Blanchette, vieux garçon dont le français n'a rien du 'joual', on le soupçonne lui aussi de perversion sexuelle:

> "J'le trouve un peu trop fin, un peu trop poli, un peu trop propre, un peu trop tiré à quatre s'épingles, pis un peu trop souriant à mon goût, c'est toute! Ah, j'irais pas jusqu'à dire que c'est une tapette, ça, j'le sais pas, pis j'veux pas le savoir. Mais j'voudrais pas qu'une vieille chum se laisse enfirouaper par un efféminé qui la décevrait un coup marié."

D'ailleurs le nom d'"Oscar" qu'a choisi Tremblay pour son personnage porte déjà en lui-même une connotation sexuelle dans la sémantique des noms propres québécois.

La Duchesse de Langeais est la pièce où Tremblay a le plus exploité l'association sexguistique dont on a donné des exemples jusqu'à présent. Dans cette oeuvre qui est un long monologue en deux actes, Tremblay met en scène une vieille prostituée mâle qui, très vulgairement et dans les détails les plus réalistes, nous fait le récit de son existence de putain international. Dans ses notes au metteur en scène, avant le premier acte, Tremblay nous dit de la 'duchesse' "qu'elle s'efforce souvent de parler à la française mais ses origines 'jouales' prennent toujours le dessus."

Dans les exemples que nous avons étudiés dans les pages qui précèdent, ce sont des religieuses, des religieux ou des laïcs qu'on soupçonne de perversion sexuelle qui parlent un français autre que le 'joual'. Mais le personnage de la Duchesse de Langeais, lui, confesse publiquement son homosexualité et s'efforce de parler une langue qui n'est pas le 'joual'. Avec la Duchesse de Langeais, nous avons la preuve indubitable de ce que Tremblay, ayant bien compris le problème sexguistique existant au Québec, dans un certain milieu, a voulu en faire le sujet de son théâtre. Ceci, Tremblay n'aurait pas pu l'accomplir sans l'emploi du 'joual' comme moyen d'expression pour ses personnages.

4. Conclusion

Tremblay a voulu faire de la langue l'objet principal du rire des spectateurs. Le comique verbal est la source première du comique de ses pièces. Rien ne pouvait mieux se prêter à la production de ce comique verbal que l'emploi du 'joual', qui est une façon de parler comique en soi. Tout Québécois va admettre qu'il n'y a rien comme une bonne farce racontée en 'joual'.

La révolte verbale, venant elle de ceux qui ne parlent que le 'joual' contre ceux qui ne le parlent pas ou plus, devait obligatoirement se faire dans la langue des révoltés.

Il a voulu aussi souligner un problème linguistico-sexuel existant au Québec, ce qu'il n'aurait pas pu faire sans l'emploi continuel du 'joual' dans son théâtre. Le 'joual', c'est la langue des hommes et des femmes qui sont sexuellement normaux.

Le français correct, c'est la langue de ceux qui ont renoncé aux sexes, les prêtres, les religieuses, les frères, des hommes dont l'apparence physique laisse transparaître un manque de virilité, des vieux garçons, des homosexuels, des snobs intellectuels, et des étrangers, les Français en particulier.

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SECOND LANGUAGE PERFORMANCE AND VYGOTSKYAN PSYCHOLINGUISTICS: IMPLICATIONS FOR L2 INSTRUCTION

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In Lantolf, Frawley, and Di Camilla (1983), we analyzed the discourse of "intermediate" level ESL students, advanced speakers of ESL, native-speaking children of English, and adult native speakers of the language.[1] The task set for the participants in our study was to construct a story presented through a series of drawings displayed sequentially. This task was similar to, although more complex than, that devised by Karmiloff-Smith (1980) for her study of pronominalization in child discourse. Karmiloff-Smith used a picture story in which a single referent was clearly established as discursive theme (a boy) from the outset. The story employed in our study had three possible candidates for thematization: either of two boys or an adult (see Lantolf, Frawley, and Di Camilla 1983 for a complete description of the story).

The results of our analysis showed that there were no absolute differences between second language learners and native speakers of a language, as if often assumed to be the case in the L2 literature (see, for example, Wolfson 1983). We were able to demonstrate that from the perspective of Vygotskyan psycholinguistic theory, the relationship among second language speakers, adult native speakers, and native children is a <u>continuous one</u>.

In the present paper, we incorporate data drawn from three additional sources: intermediate and advanced speakers of Spanish as a foreign language and from native-speaking adults of the language. We do not include data from native-speaking children, since we did not have access to this group of speakers. Throughout the ensuing discussion we rely heavily on Vygotskyan theory for our analytical framework, because it seems to us to be the most realistic and <u>integrated</u> model of language learning available at the present. In our previous paper, we discussed in great detail the applicability of Soviet theory to L2 discourse; here, however, because of space limitations, we will focus on only one of the features brought to light in our initial investigation: discursive macrostructure. Following our consideration of the English and Spanish data, we will briefly discuss the implications of our

findings for L2 instructional methodologies.

Before proceeding with our analysis, it is essential that we consider three central notions of Vygotskyan theory: order or regulation, continuous access, and inner or private speech. The work of Vygotsky and his colleagues and disciples, including Luria, Leontiev, Wertsch, and Kohlberg, among others, shows quite clearly that humans do not develop along Piagetian lines from an individual engaging in monologue to a socialized person who can engage in dialogue with other socialized individuals. The process is, in fact, the reverse. A human is from the outset social--dialogical--and then develops into an individual--monological. In other words, society and the communicative act which comprises it consist not of socialized individuals--people who have become like everyone else--who come together and share information verbally; rather, society and its communication consist of individuals who have developed from being like everyone else to being unique and who come together and behave verbally as individuals in the presence of other isolated individuals.

Communication, from the Vygotskyan perspective, has nothing to do with the transfer of information, rather it has everything to do with how individuals maintain their individuality; i.e., self-regulation in the presence of other self-regulated individuals. There are in Vygotskyan theory three types of regulation or ways of achieving order in communication tasks: object-regulation, other-regulation, and self-regulation. A speaker's utterances reflect object-regulation when the speaker is controlled by the facts of the environment, when "facts" means something which has ontological status and which is also non-human. Thus, referential speech has the communicative function of object-regulation of the speaker. A speaker's utterances reflect other-regulation when the speech is controlled by, or serves to control, other humans. The classic speech-acts other directed verbalizations fall under this rubric. Finally, a speaker's utterances reflect self-regulation when the speaker speaks to control himself/herself. All self-directed utterances fall into this category. We flesh out these functions in more detail below.

The concept of regulation embodies a developmental sequence: in acquisition of language, L2 or L1, humans pass from object-regulation to other-regulation to self-regulation or from referential speech, to dialogue, to monologue. Monologue is the highest or most complex form of speech not dialogue (see Vygotsky 1962 and Sokolov 1972). A speaker has fully acquired a language when he/she can engage in collective monologue, not in dialogue, since monologue entails the speaker as a

fully self-regulated speaker. Moreover, even though there is a developmental sequence of order, the sequence is not categorical. Any speaker, whether L1 or L2, can produce object-regulated, other-regulated, or self-regulated speech at any time depending on the circumstances of production. In other words, control is task related. Thus, there is no such thing as a native speaker of a language in absolute terms, since even supposed native speakers can be object-regulated or other-regulated in a given task of sufficient difficulty. This is because the extent to which individuals are self regulated depends upon each individual's social history or life experience in a variety of tasks up to the time of a specific task. If the communicative act is difficult--however difficult may be defined (difficulty for one is not necessarily difficulty for every speaker, since this is what being an individual means)--the speaker can reaccess an earlier communicative strategy (i. e., object-regulation, other-regulation, self-regulation) in order to solve the task of communicating; that is, gain self-regulation. Any speaker has continuous access to all forms of order by means of verbalization. In this model, therefore, availability of ordering strategies is never lost.

A final notion of Vygotskyan theory which is relevant to the present discussion is that of inner or private speech. According to the Vygotskyan model, mind is a social derivative, and therefore, all knowledge begins externally: whence the very idea of thinking as connected to inner speech (an external knowing process which has become internalized). When an individual gains self-regulation, he has done so through the internalization of an external linguistically-based order. When an individual finds himself/herself in a difficult task, he/she externalizes the inner order so that he/she may regulate himself/herself, once again, externally, in order to recover self-regulation. Thus, all of the data on verbal mediation in difficult tasks are explainable as attempts by those engaged in the tasks to externalize what they know in order to be controlled by that knowledge: inner speech surfaces as private speech in order to be internalized again. At one stage of development, individuals are controlled, not by their own internal knowledge, but by the knowledge of others (i.e., other-regulation). Eventually, this other-regulation, manifested through language, develops into private or egocentric (parasocial speech in Vygotskyan terms) speech in the same individual and then goes underground in elliptical form as inner speech. That is, knowledge is at one point interpsychological and then becomes intrapsychological. In especially difficult tasks, inner speech resurfaces in

the form of private speech; once again, the purpose is to achieve self-regulation--know the task and to provide a type of therapeutic release valve (see Sokolov 1972). If the task is too difficult, the individual may need to seek mediation not through private speech but through other-regulation (an appeal to interpsychological knowledge, see Wertsch 1979).

ANALYSIS

One of the most striking features of the intermediate ESL discourses uncovered in our 1983 paper was the proliferation of extra-discursive information and a distinct absence of connectives. The result is that the discourses of these speakers appear to be fragmented demonstrations of information rather than cohesive narratives of events (the latter are characteristic of adult native discourse, at least, in the task at hand). The absence of connectives signals object-regulation in the fact of the task.

The difficulty of the task for the L2 speakers requires that they externalize their knowledge of discourse (i. e., their metalinguistic organization of discourse) through private speech in order to achieve self-regulation in the task. Consequently, the ESL speakers' discourses abound in externalization of the macrostructure, which arises from the need to know what they are saying, rather than from the need to say it. Speakers, in essence, impose order on the task by speaking and identifying the task. Moreover, we discovered that the externalization of macrostructure was less frequent in advanced ESL speakers, virtually absent in native adult speakers, and common in native child discourse. All of this is expected in a Vygotskyan theory of discourse.

Below we present a few examples of the ways in which the English-speaking respondents opened their discourses:

A. Intermediate ESL speakers

(1) This is Tom
(2) This road--what's this? Let me just call John. John is standing on road
(3) This picture--do you want to tell me, I tell you where he is or . . .?
(4) He's a boy!

B. Advanced ESL Speakers

(5) Well, here's a man coming along the street and I see a young boy
(6) I see, Uh, apparently a young boy . . .

(7) There's a little boy . .
(8) There's a young boy walking . . .

C. Native-speaking children

(9) Let me see what you're doing here?
(10) Where? On what? And tell this?
But I don't know how! Oh! OK.
Now I know. Now I know.
(11) Once there was a little boy . . .

D. Adult native speakers

(12) Well, there's a young boy . . .
(13) A little boy on the sidewalk . . .
(14) There is a young boy in shorts . . .

All of the opening statements in (A) are attempts to control the task rather than relate information. In item (1), the speaker begins the discourse by identifying the participant in the narrative, who is literally named by the speaker. By labeling the character, the speaker is making explicit the fact that there are participants in the discourse; i. e., he is externalizing a fundamental feature of discourse macrostructure. It must be remembered that there is nothing in the stimuli to indicate that the boy even has a name. In addition, the speaker at no other time in his discourse uses this name again to refer to the boy. The speaker attempts to know the discourse by framing the character, which then allows him to relate the discourse.

The same phenomenon happens in (2), where the speaker names the boy John (the classic generic participant in discourse). But by saying "Let me just call John", the speaker is, in fact, directing himself to be allowed by himself to use the label: he is externalizing his own knowledge that he is the one who is to relate the discourse, and in so doing, he labels the person as a character in a possible discourse. Subsequent to this labeling, the speaker uses the name of this character only once more, in the next sentence; thereafter, the participant is referred to by pronominalization. The use of a restricted instance of labeling, as in (1) and (2) points up the control function of this labeling. It is not a device introduced to facilitate the cohesion of the discourse; it is extra-discursive.

Example (2) is interesting, furthermore, in its explicit questioning of the task at hand. Although the speaker has already had the task explained to him and has, prior to the narration, claimed to have understood the task, he asks "What's this?": a question whose function is to externalize the fact of the task. The speaker does not anticipate an answer here, but asks the question of himself in order to instruct him-

self in the fact of the task. It is noteworthy that the sentence which immediately follows this question is the sentence which labels the participant in the story. The speaker externalizes in the form of a question the macrostructure to be used in the task (i. e., "What's this?" means "What should be said at all?") and then proceeds to instantiate a macrostructure device--labeling of participants.

The overt question of the presence of a macrostructure is also evident in example (3). In this opening, the speaker actually seeks other regulation in the task: "Do you want me . . ." and "You want me to say . . .". The difficulty of the task demands that the speaker openly appeal for other-regulation: thus, the speaker asks the experimenter to instruct him directly as to the type of macrostructure that obtains. The L2 speaker is requesting information about the macrostructure from an external source; he is seeking other-regulation, as predicted by our theory.

Example (4) is much like examples (1) and (2) insofar as the definite reference bears a distinct connection to given information. The speaker is externalizing a given by using the definite pronoun. The given, of course, is not shared information with the auditor, but is shared by the speaker as speaker and the speaker as auditor. In other words, it is what in Vygotskyan theory is referred to as a psychological subject that has been externalized in private speech in an attempt to gain control of the task by verbalizing what is already known about the macrostructure of discourse: narrative requires participants in the events.

In the discourses of advanced ESL speakers, there is much less externalization of macrostructure in order to know the task, as can be seen in the examples in(B). Item (6) contains some overt perspectival markers ("I see . . . apparently. . .") but the use of perspectival markers is decidedly limited in the advanced ESL discourses. Examples (7) and (8) have no explicit marking of macrostructure and are much like the openings of the native speakers given in (D). This is not surprising given the theory: the task of relating is much less difficult for these speakers and thus there is less need to externalize the metalinguistic facts of the discourse in order to gain control. These speakers are, for the most part, self-regulated, which allows them to immediately relate the events of the story.

The L2 discourses given in (A) are very much like those of native children seen in (C) with regard to explicit macrostructural devices. Example (9) contains both the perspectival marker "see" and the marker of externalized control "let". The child is asking herself to be allowed to perceive the task of narration

from a particular position or viewpoint, very much like a combination of (2) and (6) above.

Similarly, in example (10), the child attempts to regain self-regulation before beginning the narration. She immediately tries to locate the task ("Where?" as in (3) above), its subject ("On what?"), and its strategy ("and tell this?") as in (3). She externalizes the macrostructural aspects of the discourse itself as an object, its content, and its type of narration. By overtly expressing these features, the child immediately regains some self-regulation, as evidenced by the utterance "OK", which can only mean that the child now has some certainty as to the task. But the difficulty of the task then re-emerges, and the child again externalizes the strategy for relating the narrative("But I don't know how!"). The very externalization of this problem re-establishes self-regulation ("Oh! OK"), and this recognition of self-regulation is followed by some very interesting and revealing statements that she knows, or that she knows that she has control ("Now I know. Now I know."). These statements are explicit testimony that the child, in this task, must <u>know</u> the task from a macrostructural perspective prior to the narration. Insofar as knowing is fundamentally external in our theory, her externalization of the fact of knowing is completely understandable.

The last example in (B), is interesting from another perspective. The child begins the discourse with "Once there was . . . ". She uses the generic narrative opening marker that occurs in fairy tales. What is curious, of course, is that there is nothing "fairytalish" about the stimuli. The child has obviously been exposed to fairy tales up to this point in her life and thus imposes fairy tale macrostructure on this discourse in order to control it prior to relating it. She externalizes what she knows about discourse organization--that they all begin with the hypothetical <u>once</u>--and this establishes her self-regulation in this particular task of narration.

The above observations about children's narration are interesting in light of the principle of continuous access. The L2 speakers behave exactly like native children in their discourse productions, as is expected from a Vygotskyan theory of discourse. The difficulty of the task for the L2 speakers requires that they use knowledge strategies from earlier stages of their development: namely, externalization of macrostructure in order to establish self-regulation from without. Thus, the form of the L2 discourse openings corresponds to the form of the discourse openings used by native children. The peculiarity of the L2 discourses is therefore understandable not in terms of correctness, in-

correctness, or appropriateness, but in its manifestation of control strategies that are remarkably like those which children use to order themselves in similar tasks.

It should be noted that the examples of adult natives in (D) contain no overt marking of the macrostructure. These speakers immediately begin to relate the narrative, because the task is not difficult for them and thus they have no need to resort to externalize knowledge to gain self-regulation. Only very rarely did any of our adult respondents externalize knowledge of macrostructure while engaged in the task, and these instances occurred at critical points of organization in the discourse.

If we now turn to the data from the Spanish speakers, we immediately notice a marked difference in the discourses of the intermediate speakers when compared to the intermediate ESL speakers. The items given below are taken from the openings of the narratives produced by our Spanish respondents:

E. Intermediate Spanish speakers

(15) Um, el está caminando y um sube . . .
(16) El niño camina y ah, él está felicidad
(17) El andando en la vía
(18) El chico camina en la calle

F. Advanced Spanish speakers

(19) Hay un chico . . .
(20) Un chico camina en la calle
(21) Este dibujo es de un chico . . .
(22) Un muchacho está corriendo . . .

G. Native speakers

(23) Pues, éste es un jovencito que . . .
(24) Un niño está caminando . . .
(25) Hay un niño que mira con una sonrisa

The most noteworthy feature of all of the openings of the intermediate Spanish speakers is the appearance of definite reference marked by use of either the definite article or the masculine subject pronoun. As we discussed earlier, the function of definite reference in these cases is not to begin the narrative but to concretize through externalization in private speech a psychological subject (i. e., given information). Although we stated it earlier, it bears repeating that the reference is treated as given not because the speakers assume shared knowledge with the listener but because they are externalizing inner knowledge in order to gain control of the task. Definite reference in this case is an indication that the speakers have not achieved

self-regulation in the task and are instead object-regulated. In our previous paper, we present a detailed argument to support our position over that taken by Karmiloff-Smith,who contends that children, the focus of her study, begin discourses with definite referents because of basic assumptions they make about the pragmatics of the situation, specifically that children up to a certain age assume that their addressee possesses shared knowledge with regard to referents depicted in the drawings. Our position is that the fundamental fallacy in Karmiloff-Smith's position, essentially Piagetian, is that the speaker is addressing the narrative to some external addressee.

A curious aspect of all but one of the Spanish openings, to be discussed later, is their remarkable consistency across speakers. We did not detect a single instance of openings that were in any way similar to the other, more commonly used openings noted in the discourses of the ESL speakers. We will propose an explanation for this phenomenon shortly.

The openings of the advanced Spanish speakers in (F) show frequent use of indefinite references, which were often embedded in existential predicate structures, a normal beginning of a narrative text (see 19). Generally, the advanced speakers were self-regulated, which allowed them to begin to relate the events of the narrative without first having to gain control through the externalization of the macrostructure.

Similarly, the adult native speakers produced no overt markers of macrostructure, since they were completely self-regulated in the task, as seen in examples (23) to (25) above.

The difference between the ESL and Spanish as a foreign language speakers becomes even more marked when we examine the relative performance of the two groups over the entire narrative. The intermediate ESL group often produced incoherent discourses due to their frequent incorporation of metastatements into the discourse. The function of these metastatements is to gain self-regulation in the task. If we look briefly at the frame-by-frame openings of the English speakers (26 to 28 below), we note that only advanced and native speakers linked the frames of the story.

(26) Intermediate ESL speaker

a. Think this picture is not good
b. Yeah, this is the problem now
c. He given the ice to the boy
d. This is, I think, the rule. What do you call it?
e. Oh, this is the problem now

(27) Advanced ESL speaker

a. While walking . . .
b. It seems that he wanted . . .
c. After that, while he was walking . . .
d. While the little boy . . .
e. The boy, after giving the ice cream

(28) Adult native speaker

a. And somebody walks up . . .
b. And then he says . . .
c. Then the guy . . .
d. And a bully comes by . . .
e. And the bully walks . . .

In (26) the speaker is ordering himself in the discourse by calling on extra-textual information and externalizing it in the form of a metastatement about each frame. Only in frame (c) do we observe the absence of any metacomment and the speaker produces a narration of the event. The consequence of the proliferation of metastatements is that the discourse is no discourse but a discrete series of events: a frame-by-frame narration. All this is understandable in Vygotskyan terms, since the speaker is regulated in the task by the presence of each frame separately; that is, he is object-regulated by the frames as objects. In his attempts to know the events in connection, the speaker externalizes the extra-textual information about each frame in the form of metastatements in order to regulate himself instead of being regulated by each frame as object. The result is a disconnected discourse, but the lack of cohesion has a functional explanation in terms of regulation.

Object regulation by each frame is virtually absent in the narratives of the advanced ESL and native speakers, as seen in (27) and (28) above. This is not surprising, since both groups of speakers are much more self-regulated and the narration that results is a fully connected discourse.

In the narratives of the intermediate Spanish respondents there is almost a total lack of metastatements, and yet the discourses are still produced as a series of unconnected episodes, as illustrated in the discourses reproduced in their entirety in (29) and (30).

(29)

a. El chico camina en la calle
b. Un hombre vende helado
c. El chico compra un helado del hombre
d. El chico da el helado a un muchachito
e. Un hombre alto trata de tomar el helado

f. El chico llora, no tiene el helado

(30)

a. Un muchacho está corriendo
b. Un muchacho es corriendo a hombre que vende helado
c. Un muchacho compra helado por . . .
d. Un muchacho da helado a su amigo
e. El amigo come el helado todamente
f. Pero un hombre muh malo tome, toma su helado ante de terminarlo

Only in (30 f) is there any attempt to use a connective. Be that as it may, the general feature of the intermediate Spanish discourses is not only the lack of connectives but also the absence of any sustained attempt at gaining self-regulation in the task. In other words, these speakers appear to be almost completely object-regulated, or at least more so than the intermediate ESL speakers. In fact, a survey of all fifteen intermediate Spanish discourses finds only two speakers who made any consistent effort at achieving control of the task. One speaker, as illustrated in (31) relied primarily upon other-regulation and occasionally manifested attempts at self-regulation.

(31)

a. El niño, how do you say to see? (ver) el ve, veo, el niño veo el, la glas. Cómo se dice ice cream (helado) helado, helado . . .
b. El hombre qui vende, vende, el helado. Hey, I didn't know I could speak this!. . .
c. El niño tiene un grande core, cuere, cuerpo, no heart? (corazón) corazón . . . por el da al piccolo, no that's Italian, no el niño small (chiquito)

In the discourses produced by the advanced and native Spanish speakers, the use of connectives is much more prevalent and the narratives are true narratives. The openings given in (32) below illustrate our point:

(32)

a. Sigue por el camino . . .
b. Ahora le pide . . .
c. Entonces le da el helado . . .
d. Parece que un hombre . . .
e. Poco después . . .

It is our position that the noticeable lack of self-regulation in the intermediate Spanish speakers and the strong tendency for them to remain object-regulated throughout the task is a result of the circumstances under which these speakers were exposed to their second language. In most language classrooms students are provided with little if any opportunity to gain self-regulation in the task of speaking the target language. Traditionally, foreign language teaching has either forced students to be object-regulated by the language, the materials, texts, drills, exercises, and now by computers, or at best to be other-regulated by the instructor. The fact that teachers undertake to correct learners' errors, while they are attempting to speak the language (i. e., self-regulate), sends the implicit message that self-regulation is not to be permitted when using this language. As Long (1983, 213) points out, in most language classrooms, the instructor allows for little if any feedback from the learners in any way that would permit learners to negotiate a conversation in a two-way interaction (true dialogue), much as would occur in the extra-classroom setting. In the natural setting, speakers self-regulate in a conversation through such activities as confirmation checks, comprehension checks, and the like. This does not take place to any significant degree in most classrooms, and if it does, this kind of negotiation is usually carried out in the native language.

In Long's study of six ESL teachers in an elementary classroom he found that participants most often play the traditional roles of teacher/student, with the teacher either lecturing, praising, correcting, drilling, questioning, presenting, etc., all activities functioning as other-regulation. What is more, the kinds of questions asked of students were most frequently what Long calls "display" questions of the type "Are you a student?" "Is the clock on the wall?" (Long 1983, 216). Teachers also were observed to exercise control through the use of such directives as "Give me the present perfect of . . .". The effect of such procedures is not only other-regulation but object-regulation as well. The target language is thus presented to the learner not as an activity for achieving self-regulation in the presence of others but as an object used to package messages and send them across to some listener.

We are, of course, aware that Long's observations were based on ESL and not foreign language classrooms. But if other- and object-regulation are the aim of ESL instruction, they are certainly, if not more so, the goal of foreign language instruction. Felix (1981) reports on an English as a foreign language class in Germany where he discovered that virtually the entire

course was conducted through repetitions, drills, explanations, and controlled question-and-answer responses, all of which were geared toward compelling the students to conform strictly to the type of patterns presented by the instructor (Felix 1981, 90).

If both ESL and foreign language classes foster object- and other-regulation and do not allow learners to achieve self-regulation, how can we explain the differences between the ESL and Spanish speakers in our study? The answer is that the ESL speakers are ESL speakers, which means they engage in extensive interaction in the natural setting virtually on a daily basis. This affords them every opportunity to achieve self-regulation in the fact of the target language. In other words, the ESL speakers have a relatively clear idea of the self-regulatory function of the target language, because of their extra-classroom interactions. None of the Spanish speakers in our study reported using the target language to any extent whatsoever outside of the classroom, and none reported having any substantial foreign experience in the language. Even among the advanced students, reports of extensive daily use in the extra-classroom setting were rare. Advanced students, however, by virtue of their pursuit of courses in content areas do have some opportunity to gain a certain degree of self-regulation in the target language, but even in this case, their narratives reflected much less self-regulation than did those of the advanced ESL speakers.

The difficulty which we perceive with most L2 methodologies is that they never really allow learners to become self-regulated in the target language. This is because they stem from a philosophy that views language as an object or set of facts to be acquired rather than as an activity for achieving self-regulation. In Vygotskyan theory, the fact that language is seen as an activity means that it cannot be discussed outside of the context of use in social settings. As Zebroski (1983, 55) states: "language is not discussed without social context. Social context not only adds to the understanding of language and use, but it is at the center of such study. Context does not mean additional details attached to findings about language, it provides the very vantage point from which to study and observe language." Thus, the Russian term for psycholinguistics translates to English as "speech activity". Speech activity implies that the focus of study ought to be on the relations between various processes like speaking, listening, thinking, reading, writing and not on isolated static linguistic behaviors (Zebroski 1983, 55). Therefore, skills like reading, writing, speaking, listening cannot be taught separately, as

has been the case in most language programs. As evidence we offer the fact that university language programs almost always have separate courses in grammar and composition, conversation, and reading. Since the skills are interrelated through their social motive and origin, they must be taught in an integrated fashion.

The methodology which we find most closely adheres to Vygotskyan psycholinguistic theory is Strategic Interaction, pioneered by Robert J. Di Pietro. SI is predicated on the notion of language as an activity and not as a static body of facts, or as Di Pietro terms it, "artifact". SI sees the dialogue as the basis of human speech activity and has attempted to integrate all language skills (i. e., speaking, listening, writing, and reading) through the use of dialogue (see Di Pietro 1983a, 1982). Most importantly, the goal of SI is self-regulation, for without self-regulation learners would be unable to use the language strategically or to present themselves to others in specific roles. The interactions that take place in the classroom in the form of scenarios (see Di Pietro 1983b) are not controlled by the teacher but are developed by the learners themselves. The learners initiate and determine the direction of language activity, not the instructor. In the SI classroom, just as in the case of children learning L1 or adults learning L2 in a natural setting, the learners use the other rather than being used by the other in order to achieve self-regulation in the target language.

The final bit of evidence to substantiate our claim remains to be uncovered: L2 speaker discourse drawn from students who have participated in a SI classroom. Some research in this regard has recently been completed by Khanji (1983) and the results show that SI students do indeed perform differently than students from a method such as Total Physical Response, but additional evidence is still required.

Notes

[1]Terms such as "intermediate", "beginning", and "advanced" are categorizations often used in second-language instruction in an attempt to group learners according to their supposed linguistic abilities. We maintain that such terms are misleading if not equivocal, since they are predicated on some "norm" external to the learners,and more importantly, they deny the existence of the individual learner. We use the terms in the present study simply as a convenient label. It must be underscored, however, that in our position, as will be evidenced in the ensuing discussion, labels

such as "beginning", "intermediate", and "advanced" tell us very little about a learner's overall language ability, since this ability is dependent on the specific communicative task in which a speaker is involved at any given moment.

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UN TEST ECRIT PEUT-IL VRAIMENT EVALUER LA COMPETENCE A COMMUNIQUER?

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C'est dans la perspective d'un enseignement des langues secondes mis en contexte et en situations pragmatiques que nous avons developpé à notre école un programme de français pour adultes respectant les principes fondamentaux de l'approche communicative. Confrontés au problème de la sélection d'un test de rendement et ce, dans le but, d'une part, d'évaluer la qualité et l'application de notre programme orienté vers l'enseignement du français oral et, d'autre part, d'évaluer l'efficacité réelle de l'approche communicative, nous avons dû concevoir des tests dits "fonctionnels". Ces tests devaient répondre à des exigences d'économie et de rapidité d'exécution tout en donnant priorité à la validité des résultats. Ces tests devaient être conçus pour isoler la compétence réelle à communiquer en regard de la matière enseignée, pour en quantifier les diverses valeurs et surtout, pour optimiser le rendement de l'étudiant en adoptant une approche plus humaniste et plus spontanée.

Il faut se réjouir des quelques rares travaux de recherche en matière de méthodologie d'évaluation de la compétence à communiquer.M. Wesche (1981) et surtout (1983) fait état de cette nouvelle génération de tests de communication en quête d'une plus grande objectivité. Il faut de plus souligner les travaux de recherche de l'équipe Connors-Ménard à l'Université de Montréal (1979-1981) consacrés à l'évaluation des divers programmes de français en regard de la qualité du français des apprenants adolescents à Montréal, ceux-là étant mis en situation quasi réelle de communication pour fin d'observation.

Très peu de travaux se sont penchés sur le problème complexe du niveau de compétence communicative en langue seconde. Très peu de travaux réussissent à décrire de manière fonctionnelle, tant en termes de quantité qu'en termes de qualité, la nature même du progrès en langue seconde. Aucun critère de progression n'a, jusqu'à ce jour, été clairement défini. La

capacité linguistique à communiquer doit-elle être fonction du débit? ou plutôt fonction d'unités d'information: nombre de mots? nombre de lexèmes? nombre de bits? nombre de prédicats? nombre de propositions? Ou faut-il plutôt repenser toute l'échelle de performance en termes d'addition de fonctions et de notions langagières? Si oui, comment peut-on alors établir un classement d'étudiants regroupés suivant leur connaissance et leur maîtrise de la langue?

Compte tenu de cette problématique, comment peut-on porter un jugement objectif et scientifique sur le progrès trimestriel de l'étudiant? Françoise Howard (1980) affirme: "There is no doubt that the concept of communication as current linguists define it is gaining credence with second language teachers, but research in testing procedures has not caught up with this new concept. (...) It is our view that when teachers are sensitized to the "new concept" of communicative proficiency they will design better techniques to develop this skill."

Après trente-six heures de cours pour un groupe de débutants (groupe 1A), et seulement dix-huit heures pour les groupes intermédiaires et avancés (groupe 11 et 111 respectivement), on nous demande de tester et d'évaluer le rendement des étudiants. De toute évidence, on s'attend à un progrès manifeste. Après avoir éliminé l'entrevue orale comme moyen d'évaluation pour de multiples raisons dont, entre autres, le manque de critères rigoureux pour la quantification des facteurs de performance, nous avons opté pour un outil d'évaluation susceptible de favoriser tant la personnalité introvertie que l'extrovertie . S'inspirant des mêmes principes, stratégies et techniques utilisés pour enseigner la langue seconde à notre école, notre stratégie d'évaluation consiste en la suivante: optimiser la performance linguistique du candidat en situation d'évaluation en lui soumettant des tâches plus créatrices que linguistiques, des contextes plus réalistes donc plus fonctionnels qu'académiques. C'est ainsi que nous avons conçu un test écrit comportant des images variées (dessins à personnages multiples, bandes dessinées, etc.). Ces représentations graphiques constituent le stimulus situationnel reproduisant l'information contenue dans une situation de communication réelle susceptible d'influencer le choix des structures linguisti-

ques appropriées. Ainsi, la tâche consiste à 1. interpréter l'image et la situation suivant les diverses données sociologiques, psycho-comportementales, fonctionnelles, situationnelles, et énonciatives ; 2. décoder le stimulus linguistique généralement très simple (commentaire d'un des personnages, réponse à une question, une consigne ou une consigne) et 3. produire et écrire un segment de discours de manière à faire parler un des personnages. Ainsi, l'étudiant doit décoder toute l'information visuelle, "interactionnelle" et linguistique pour ensuite compléter des bulles vides ou imcomplètes. Le test contient cinquante items représentatifs à la fois de la matière enseignée, celle-ci étant les besoins langagiers spécifiques de chaque groupe. De cette façon, il est possible de tester à la fois l'usage réel du vocabulaire, des structures formelles, des actes langagiers tels "offrir de l'aide à un client", "dire aurevoir", "comprendre l'heure", "commenter sur la température", etc.

Bien que l'enseignement de la langue n'ait pas été orienté vers l'acquisition du français écrit, l'étudiant pouvait tout de même écrire des phrases complètes et tout à fait grammaticales ayant été entrainé à imaginer des dialogues pour des jeux de rôles. Il n'était pas pénalisé pour les fautes d'orghographe. Loin d'être angoissés, tendus, ils étaient tous anxieux de commencer l'exercice. Le test était moins une menace, beaucoup plus un jeu et un défi pour l'imagination.

Du point de vue théorique, aucune référence à des tests de ce type n'a pu être trouvée, bien que notre recherche soit loin d'être achevée. Parmi les tests existants faisant usage de stimulus visuels, l'image sert non pas à représenter des personnages en interaction linguistique, mais simplement pour déclencher la narration ou le commentaire chez le candidat testé. (Allen, 1970) Dans une situation de narration, l'étudiant ne fait jamais usage de ses connaissances linguistiques requises en situation réelle d'interaction spontanée. Il ne tient que des propos passifs, à la façon d'un journaliste ou d'un observateur. De plus, un seul type de discours est observable: la narration. Dans nos tests, l'étudiant, en faisant parler le per-

sonnage, parle lui-même. De plus, il bénéficie d'une certaine liberté d'expression. Les réponses étant de type ouvertes, l'élève ne peut échapper à la contrainte de la production spontanée. Il ne peut camoufler son incompétence derrière des phrases parfaites, bien structurées et toute mémorisées à l'avance. Aucun ne peut non plus se cacher derrière le motif de la gêne souvent invoqué en situation d'entrevue orale, pour justifier son incompétence. Anthony Mollica (1976) affirme: "A comprehensive discussion on the various potential uses of cartoons to bring out cultural characteristics, to emphasize language structures and to test comprehension in the language classroom has not yet appeared, however". Rebecca Valette (1981) affirme d'autre part: "In speaking and writing tests (...) one direction will probably lie in the area of sequential pictorial cues, such as cartoons without words".

Dans la seconde partie, nous présenterons et discuterons les résultats obtenus auprès de divers groupes d'étudiants adultes . Au total, six tests écrits ont été conçus pour trois niveaux différents de compétence. Nous avons pu recueillir plus de données pour le test I niveau 1 , ce dernier ayant été administré à plusieurs groupes comparables. Bien qu'ayant très peu de données pour les tests de niveau II et III nous en ferons état pour permettre de comparer le progrès de ces groupes avec celui des groupes de niveau I.

Au tableau 1 , sont fournies les données pour chaque groupe testé. Chaque groupe a subi un premier test oral de répétition, ce test contenant six niveaux de complexité. Chaque niveau est déterminé en fonction de plusieurs facteurs combinés: prononciation, structures grammaticales complexes, combinaison de plusieurs règles grammaticales en une seule phrase, vocabulaire spécialisé. Ce premier test ($Oral_1$) servait à la fois de mesure de classement et de mesure de comparaison du progrès. Les groupes marqués NL étaient inexistants au moment de la première session d'évaluation. Sous la colonne $Oral_2$, on lira le nombre d'heures d'instruction accumulées au moment du deuxième test oral. On remarquera que les groupes ayant subi les tests II et IIIA n'avaient

alors reçu que 18 heures de français. Sous la colonne $Oral_3$, on lira le nombre d'heures d'instruction reçues entre la session d'évaluation $Oral_2$ et la session $Oral_3$. On remarque à cet effet une grande disparité entre les groupes pour le test $Oral_3$, celle-ci nous permettant de vérifier notre hypothèse initiale à l'effet que la progression en conversation n'est pas régulière, l'étudiant atteignant régulièrement certains plafonds qui exigent plusieurs heures d'instruction supplémentaires pour atteindre un niveau supérieur. Les tests $Ecrit_1$ ayant été administrés en même temps que L'$Oral_2$ et l'$Ecrit_2$ en même temps que l'$Oral_3$, on retrouve sous les colonnes $Ecrit_1$ et $Ecrit_2$ le même nombre d'heures d'instruction.

Au tableau 2, nous avons relevé les scores bruts pour tous les tests administrés au cours des six mois consécutifs d'instruction. Nous avons cru nécessaire de faire ce relevé afin de pouvoir vérifier d'une part, la validité du test oral en regard de sa capacité à déterminer les niveaux réels de compétence en matière de conversation et, d'autre part, afin de pouvoir évaluer la nature du progrès réel des candidats d'une session à l'autre en regard du point de départ de chaque niveau. Ainsi, on constate que le test oral permet de discriminer, de manière suffisante, la compétence orale des sujets. Les moyennes de groupe-test pour chacun des tests sont les suivantes: à l'Oral, niveau I: 41.8%; niveau II: 52.5%; niveau III: 67%. A l'$Oral_2$, niveau I: 63.76%; niveau II: 69.3%; niveau III: 79.3%. A l'$Oral_3$, niveau I: 72.28%; niveau II: 75.8%; niveau III: 81.5%. Il est intéressant de remarquer que les moyennes de groupe confirment l'hypothèse initiale suivant laquelle les niveaux I et II sont plus proches (10.7% d'écart) en termes de capacité à converser que ne le sont les niveaux II et III (14.5% d'écart).

Par ailleurs, la différence entre les moyennes au test Oral et au test Ecrit étant minime (variant entre 4.3% et 10.45%), du moins pour les niveaux I et III, ceci permet de croire que le test Ecrit, tout en évaluant des facteurs de compétence autres que ceux vérifiés par le test oral, ce dernier permet autant de déterminer le niveau réel de compétence à communiquer. Un calcul de corrélation Pearson nous permet d'ailleurs de constater (tableau 3), du moins pour le

niveau I, l'existence réelle d'une corrélation positive entre le test $Oral_3$ et le test $Ecrit_2$ (+ .67), entre le test $Oral_2$ et le test $Ecrit_1$ (+ .76). Les résultats ne sont toutefois pas aussi probants dans le cas des niveaux II et III. L'absence de corrélation positive chez le niveau II peut s'expliquer par, d'une part le nombre limite de sujets dans le groupe, et d'autre part par un problème de motivation et d'assiduité au cours. Quand à la corrélation négative obtenue au niveau III, il serait trop tôt de conclure que le test Ecrit est impuissant à rendre compte de la compétence communicative. Il est toutefois permis de croire que ce type de test, dû à la simplification des tâches linguistiques présentées au candidat, ne peut vérifier la véritable compétence à manipuler la langue dans toute sa complexité. D'autres études ultérieures nous permettront d'infirmer ou de confirmer cette hypothèse. On remarquera par ailleurs une autre corrélation positive au tableau 3, soit celle Auto-évaluation 1 et Ecrit 1 (+ .77%). Nous avions demandé à nos candidats d'évaluer, le jour même de leur test Ecrit et leur test Oral, leur propre compétence à parler et à comprendre le français. Nous avons comparé ces résultats pour les niveaux I et II, et nous avons obtenu cette corrélation positive pour le niveau I seulement. Il faut toutefois souligner que la corrélation non significative (+ .71%) deviendrait probablement significative, jouissant d'un nombre plus élevé de candidats dans le groupe.

Au tableau 4, on peut constater la progression des étudiants d'une session à l'autre, tant à l'oral qu'à l'écrit. Cette progression est exprimée au moyen d'un indice de progression calculé de la façon suivante:

moyenne du groupe test le plus récent - moyenne du groupe test précédent = indice de progression

De toute évidence, tous les groupes pour tous les niveaux ont obtenu l'indice le plus élevé de progrès à l'$Oral_2$, avec une moyenne générale de +17.6% pour le niveau I, +16.8% pour le niveau II et +15.6% pour le niveau III. Ces résultats ne nous surprennent nullement. Les professeurs avaient senti dès le départ que l'étudiant progressait très rapidement au début du cours, comme dans un sprint, pour ensuite se stabiliser. C'est ainsi qu'au test $Oral_3$, l'indice

était moins élevé qu'à l'$Oral_2$ tant au niveau I (+ 8.52%) qu'au niveau II (+ 6.5%) qu'au niveau III (+ 2.6%). On remarquera que l'indice le plus élevé étant celui du niveau de compétence le plus bas, et celui le plus bas étant celui du niveau de compétence le plus élevé. Bien que le progrès ait été moins marqué à l'$Oral_3$, il n'en reste pas moins que certains groupes, notamment les groupes IA et IC mais surtout II, ont obtenu un indice très élevé au test $Ecrit_2$ (+ 19.4%, +14.3% et + 32.9% respectivement). Ces résultats sont intéressants pour interpréter le progrès incomparable réalisé par le groupe II. Une comparaison des moyennes à l'Oral et à l'Ecrit fait voir que le progrès s'est effectué non pas au niveau de l'oral mais plus au niveau de l'écrit. Dans cette perspective, on pourra affirmer que nos tests écrits permettent d'isoler certains facteurs de progression que notre test oral ne peut isoler, bien que les deux tests agissent en complémentarité.

Bien que les résultats s'avèrent confirmer l'hypothèse initiale selon laquelle les tests écrits peuvent vérifier la compétence à converser dans des situations du quotidien, du moins pour les tests I et II, une analyse plus qualitative des réponses s'imposait. C'est ainsi qu'au moment de la correction des test écrits, nous avons défini très clairement nos critères de correction. Toujours à la recherche d'une plus grande objectivité en matière de classement et d'évaluation du langage spontané, il fallait alors décider du critère général de référence pour l'acceptation des réponses. Ainsi, la réponse idéale est la structure, simple ou complexe, exprimée dans le contexte approprié, et susceptible d'être interpretée aisement et clairement par un locuteur natif. Ainsi donc, le seul critère grammatical généralement utilisé pour juger de la "grammaticalité" de la phrase n'est désormais plus le seul critère pertinent. La relation du propos avec l'extratexte (situation, psychologie des actants; sociologie des groupes; etc.), la relation du discours avec l'intratexte (niveau stylistique; cohérence et cohésion entre unités de sens; etc.), le choix de la stratégie rhétorique (type de discours; force élocutoire; accents et intonation; etc.), tous ces élements constituent autant de facteurs déterminants dans la

réussite ou l'échec du message linguistique. Tenant compte de tous ces facteurs au moment de la correction des réponses, nous avons établi les catégories de réponses suivantes: A. sémantiquement acceptable; B. formellement (syntaxiquement) acceptable; C. rhétoriquement acceptable. Cette catégorisation a été utilisée pour la correction des tests de niveau II et III. Quand au test de niveau I, nous avons appliqué un barême de correction un peu moins complexe: catégorie A: comme un locuteur natif; catégorie B: compatible avec le contexte + sans ambiguité sémantique/syntaxique; catégorie C: partiellement incompatible avec le contexte, légère ambiguité, absence d'élément d'information majeur; catégorie D: incompatible avec le contexte, contenu non interprétable, ambiguité majeure.

Ayant recueilli plus de réponses pour le test $Ecrit_1$ que pour tous les autres tests, nous avons analysé le contenu de ce dernier en calculant en pourcentage le nombre de réponses obtenues dans chaque catégorie. Nous avons ensuite comparé ces résultats à ceux obtenus au test $Ecrit_2$. Notre hypothèse est que le pourcentage de réponses D et C sera moindre à l'$Ecrit_2$, ce qui signifie une amélioration de la qualité des messages transmis. En corollaire, on s'attendra à ce que le pourcentage de réponses B et A augmente, ce qui renforce l'affirmation concernant l'amélioration de la qualité du message. Au tableau 5, on peut voir les résultats de cette analyse. Effectivement, le nombre de réponses non interprétables, ambigues ou incompatibles (D et C) a significativement diminué (- 12% et - 5% respectivement). Et inversement, le nombre de réponses complétés, non ambigues et interprétables (B et A) a significativement augmenté (+ 3% et + 9% respectivement). Ce mouvement de progression vers le haut dans cette échelle de complexité des réponses vient par ailleurs prouver la fidelité de nos catégories de réponses.

En conclusion, tout porte à croire que le critère d'évaluation de la qualité du message déterminé en termes de compréhensibilité semble tout à fait pertinent pour évaluer objectivement un segment linguistique produit en langue seconde. Aux termes de cette première expérimentation, les résultats, observations

et commentaires sont suffisamment encourageants et révélateurs pour nous inciter à poursuivre cette recherche, notamment en ce qui concerne la catégorisation et la pondération des réponses orales. Cette approche nous a permis de faire l'analyse en profondeur des divers types de messages en fonction de divers facteurs imbriqués les uns dans les autres. C'est justement cette imbrication des facteurs multiples qui rend l'évaluation complexe et par conséquent par trop subjective. Une partie de la solution réside certainement dans l'isolement de chacun de ces facteurs pour pouvoir évaluer leur compétence et leur influence respectives sur le message produit par l'interlocuteur.

En ce qui concerne la capacité du test Ecrit a évaluer la compétence à communiquer, les analyses statistiques suggèrent qu'en effet ce type de test puisse rendre compte d'un certain type de compétence, soit la capacité à produire des segments linguistiques en contexte sociologique, psychologique et rhétorique appropriés. Nous ne pouvons toutefois rien conclure de positif, ayant encore trop peu de données à cet effet. D'autres expérimentations sont en voie de préparation.

TABLEAU 1

DONNEES COMPARATIVES
DES GROUPES

Test Groupe	N	Heures d'instruction				
		$Oral_1$	$Oral_2$	$Oral_3$	$Ecrit_1$	$Ecrit_2$
IA	5	0	36	72	36	72
IB	4	0	40	40	40	40
IC	4	NL	0	30	0	30
ID	4	NL	0	28	0	28
IE	4	NL	0	20	0	20
II	6	0	18	36	18	36
IIIA	4	0	18	36	18	36
IIIB	6	NL	0	30	0	30

TABLEAU 2

SCORES BRUTS EN % POUR TEST
ORAL ET TEST ECRIT

Test Groupe	$Oral_1$	$Oral_2$	$Oral_3$	$Ecrit_1$	$Ecrit_2$
IA	39.6	52.8	64.2	32.4	51.8
IB	44	66	72.2	66	64.7
IC	NL	71	75.5	54.7	69
ID	NL	72	81	84.5	NL
IE	NL	57	68.5	59.7	NL
Moyenne	41.8	63.76	72.28	59.46	61.83
II	52.5	69.3	75.8	49.9	78.8
IIIA	67	82.6	83.2	64.8	72.8
IIIB	NL	76	79.8	78	NL
Moyenne	67	79.3	81.5	71.4	72.8

TABLEAU 3

CORRELATION DES RANGS
CALCUL PEARSON

NIVEAUX I	N = 19	
$Oral_3$ - $Ecrit_2$		.67*
$Oral_2$ - $Ecrit_1$		.76*
$Auto\text{-}Eval_2$ - $Ecrit_2$		.29
$Auto\text{-}Eval_1$ - $Ecrit_1$		.77*
NIVEAUX II	N = 6	
$Oral_3$ - $Ecrit_2$		.38
$Oral_2$ - $Ecrit_1$		.25
$Auto\text{-}Eval_2$ - $Ecrit_2$		.71
$Auto\text{-}Eval_1$ - $Ecrit_1$		.41
NIVEAUX III	N = 11	
$Oral_3$ - $Ecrit_2$		-.19

TABLEAU 4

INDICES DE PROGRESSION
EN % POUR ORAL ET ECRIT

Test Groupe	$Oral_1$	$Oral_2$	$Oral_3$	$Ecrit_1$	$Ecrit_2$
IA	NL	+13.2	+11.4	NL	+19.4
IB	NL	+22	+ 6.2	NL	- 1.3
IC	NL	NL	+ 4.5	NL	+14.3
ID	NL	NL	+ 9	NL	NL
IE	NL	NL	+11.5	NL	NL
Moyenne		+17.6	+ 8.52		
II	NL	+16.8	+ 6.5	NL	+32.9
IIIA	NL	+15.6	+ 1.4	NL	+ 8
IIIB	NL	NL	+ 3.8	NL	NL
Moyenne			+ 2.6		

TABLEAU 5

ANALYSE QUALITATIVE
DE LA PROGRESSION

- TEST NIVEAU I -

Catégorie réponses	$Ecrit_1$	$Ecrit_2$	Différence
A	30%	39%	+ 9%
B	17%	20%	+ 3%
C	20%	15%	- 5%
D	36%	24%	- 12%

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COGNITIVE STYLE, LATERAL EYE MOVEMENT AND DEDUCTIVE VS. INDUCTIVE SECOND LANGUAGE LEARNING

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This paper is concerned with investigating a hypothesized pattern of correlation between cognitive style, lateral eye movement (LEM) and success in deductive and inductive second language learning. The study is important for several reasons: 1) it allows to test whether teaching methodology affects success in the acquisition of a foreign language differentially in individuals with different cognitive styles, 2) it allows to verify the validity of lateral eye movement (LEM) as a measure of cognitive style, and 3) it permits to see whether non-right-handers have a different pattern of cognitive style than right-handers.

Witkin, Moore, Goodenough and Cox (1977) have suggested the following characteristics of cognitive styles: first, they are concerned with the process of perceiving, thinking and problem solving. Secondly, they tend to be stable over time, although they are not totally unchangeable. Third, cognitive styles lie on a bipolar continuum with regard to the analytic/holistic dimension. Learning strategies of either the field-dependent individual, who follows the organization of a field as presented, or the field-independent individual, who imposes structure on a given field, are simply different ways to process information.

As has been proposed by Galin (1974), the left cerebral hemisphere is specifically involved in processing language and linguistic abilities as well as in analytical and sequential mode of thinking. The sequential mode of processing is best characterized in the case of auditory speech input. The verbal system is also sequentially organized by virtue of its syntactical nature: its performance grammar depends on temporal ordering and on interdependence of elements (Paivio, 1971). The right hemisphere has been implicated in musical ability, holistic, imagistic and spatial thinking.

To varying degrees all adults are capable of both approaches. Global as well as analytical cognitive styles appear to be valuable instruments for problem solving and creative thought.

An important factor in cerebral asymmetry is the handedness of an individual. Levy (1974) discussed studies in which left-handed subjects seemed to possess more bilateral representation of language than did right-handed subjects (Hécaen and Sauget, 1971; Hardyck, 1977).

Several studies of the relationship between individual differences in cognitive style and hemispheric functioning have used LEM data as a measure of hemispheric activation. When asked a question that requires reflection, a person will often shift his eyes to the left or the right while thinking about an answer. It has been suggested that individuals manifest characteristic patterns of such lateral eye movements (Day, 1964; Bakan, 1969; Kinsbourne, 1972), and that differences in LEM's are indicative of differences in cognitive style (Tucker, note 1; Conklin et al., 1968; Luborsky et al., 1965).

Some experiments report significant hemispheric asymmetry patterns for LEM. Others have failed to identify significant hemispheric patterns. A fundamental assumption behind research in the field is that LEM is a valid measure of differential activation of the two hemispheres. However, the assumption that LEM measures hemispheric preference is itself in need of documentation (Ehrlichman and Weinberger, 1978; Zatorre, forthcoming).

Despite the fact that LEM is far from being reliable as an indicator of hemispheric functioning, it has been used as the only measurement of determining cognitive style (Hartnett, 1975).

The present study was inspired by Hartnett's (1975) findings on second language learning. She tested the hypothesis that students successful at a deductive method of instruction will be left hemisphere dominant learners while students successful at an inductive method will be right hemisphere dominant learners. Hartnett's thesis has been quoted repeatedly since 1975 (Krashen, 1975; Albert and Obler, 1978; Vaid and Genesee, 1980; Galloway, 1983) and never been questioned. Her findings have been considered final and conclusive and have served as premisses for other studies. Closer analysis of the study, however, reveals several severe shortcomings in the areas of design, execution, data analysis and interpretation, such that the validity of her results needs to be seriously questioned.

Several of Hartnett's thesis' shortcomings were avoided in this study. Among others, not only "A" students were investigated, but a normal student population. 123 subjects (against 30) were investigated. Previous knowledge of the second language was controlled. Handedness (personal and familial) was assessed in accordance with explicit rigorous criteria. Sex bias was avoided. The LEM experiment was videotaped and assessed by two independent judges. 30 questions were used (as opposed to 10). Taped voice was matched with sex of subject.

The following predictions were formulated:

1) Students with a more global cognitive style of information processing (global students) will do well with the inductive method and not so well with the deductive method.

2) Students with a more analytical cognitive style of information processing (analytical students) will do well with the deductive method, but will also do well with the inductive method, since they tend to analyze whatever material is presented to them. They will be capable of analyzing a field, whereas the global students are not capable of taking apart a field.

3) Non-right-handers will behave differently with respect to cognitive styles, since they are generally assumed to be less lateralized for speech and visuo-spatial functions.

4) Global subjects will show more initial gaze shift to the left and up. They will exhibit also more stares than analytical subjects.

5) Analytical subjects will show more initial gaze shift to the right and down. They will exhibit also less stares than analytical subjects.

6) All non-right-handers will show a pattern different from that of right-handers.

Methods and Procedures

The experiment of the present study was carried out in two phases. The first phase included a group administration of the cognitive style measure, a cloze test, a questionnaire on the learners' attitude and motivation and additional student background information. The second phase included individual testing of subjects on the gaze shift task.

Subjects

Subjects were 123 native English or French speaking students in beginner German language classes at McGill University and the Goethe-Institute in Montreal. They were divided into two experimental groups, according to their method of instruction, deductive and inductive. Within each group subjects were categorized according to their cognitive style differences on the basis of the Group Embedded Figures Test (GEFT).

Testing

Each class was tested in accordance with the methodology used for language instruction. Formal grammar tests were administered to the deductive group and functional tests were administered to the inductive group. Both tests verified the acquisition of the same elements in L2, the first one explicitly and the second one

implicitly.

Deductive and inductive group testing - cloze test. A cloze test was administered to both deductive and inductive groups. Presumably, a person needs to employ the totality of interrelated skills that comprise a language system (e.g. grammatical, lexical, contextual) in order to predict which word would be appropriate in each blank space. This prediction seems to involve an hypothesis testing strategy based on one's internalized linguistic competence.

Individual testing. Reflective eye movements were studied in subjects whose cognitive style, as reflected in GEFT scores, emphasize either verbal-analytic or spatial-global information processing. Thirty questions were formulated in such a way as to enable the subject either to process them by forming a visual image of them, allegedly involving the right hemisphere, or to solve them using verbal-analytical processing, allegedly involving the left hemisphere, thus not imposing any mode of information processing on him. (E.g. Solve this problem: Green Mountain is not as high as Yellow Mountain, Blue Mountain is not as high as Green Mountain. Which is highest?)

All questions were prerecorded in English and in French by both males and females. Sex of voice was matched with sex of subjects.

Handedness questionnaire. Annett's (1970) questionnaire based on twelve major and minor actions was used to determine the subjects manual preference.

Results

The results will be presented and analyzed according to the different tests involved.

The average proficiency score for the deductive classes was 78.16% and for the inductive classes 81.47%. The average score on the GEFT out of a possible 18 points was 13.20 for the deductive classes and 11.67 for the inductive classes (see table 1).

Table 1
Mean score for proficiency and GEFT

	mean score proficiency	mean score GEFT	slope
all data	79.24	12.70	-
deductive group	78.16	13.20	1,16
inductive group	81.47	11.67	0,66

Correlation tests were applied to see whether a correlation between the GEFT and proficiency score existed. The linear regression lines indicate that there is such a correlation. From the figures, one can determine that there is a stronger correlation between the GEFT and proficiency score for the deductive than for the inductive group (slope for deductive group 1.169; slope for inductive group 0.665 (parallel lines indicate no correlation)).

A second test, a scale independent test, called the Spearman rank correlation test, was applied by ranking the students in terms of their GEFT and proficiency scores. Significant results were obtained for all cases. (See table 2.)

Table 2
Spearman rank correlation coefficient
for GEFT and proficiency scores

	Spearman Correlation Coefficient (r)	Test Statistic (t)	Significance Probability (p)
all data	+0.42	-4.60	<0.0001
deductive group	+0.46	-4.15	<0.0001
inductive group	+0.39	-2.39	<0.0084

The Spearman rank correlation test thus supports the evidence provided previously by the linear regression lines. There is a strong correlation between the GEFT and the proficiency scores, although the correlation is more significant for the deductive group. As demonstrated by both tests, the linear regression lines for the deductive and inductive classes differ in the sense that, in the deductive classes, a low GEFT score correlates with a low proficiency score, and a high GEFT score correlates with a high proficiency score. In the inductive classes, this relationship is less strongly correlated, a high GEFT score showing only a slight advantage in proficiency. A person exhibiting a low score on the GEFT in the inductive class has a much higher proficiency score than a person showing a low score in the deductive class. Subjects having high scores on the GEFT do equally well in both classes. Since a high GEFT score indicates an analytical subject and a low GEFT score indicates a global subject, we can say that predictions 1 and 2 of the experiment which state that 1) the more global students will do well with the inductive method and not as well with the deductive method and 2) that the more analytical students will do well with the deductive method, but will also do well with the inductive method, were verified.

The two-sided Wilcoxon rank test was applied to see whether there was an influence of handedness on the GEFT score and of

handedness on proficiency. Results show that this was not the case. Since there was no significant influence of handedness on the GEFT score (Test statistic $w=0.55$; $p \approx 0.58$) nor of handedness on the proficiency score (Test statistic $w=0.73$; $p \approx 0.78$), the null hypothesis of independence between these two factors was not disproven. All non-right-handers, 47 out of 123 - including according to Annett's classification, inconsistent right-handers, inconsistent left-handers, left-handers without and with familial sinistrality - show no disadvantage on either of the two above mentioned measures. The result fails to confirm the third prediction.

The two-sided Wilcoxon rank test was applied to the cloze test data, ranking all students from deductive and inductive classes together, to see whether there was any particular class advantage. No such advantage was found (Test statistic $w=0.65$; $p \approx 0.51$).

A t-test procedure for comparing the means of two distributions was applied to the cloze test data for the deductive and inductive classes. Strictly speaking, this test is only valid when the distributions are normal or nearly normal. This test gave a test statistic $t=0.48$ with corresponding significance $p > 0.05$, and was thus inconclusive.

The two-sided Kolmogorov - Smirnov Test was applied to the cloze test data to see whether the distribution in both groups, deductive and inductive, was the same. The test was split as follows: positive deviation test ($p \approx 0.536$), negative deviation test ($p \approx 0.706$), absolute deviation test ($p \approx 0.424$). The results demonstrate that the distribution on the cloze test was the same for both groups.

Hence, deductive and inductive groups did equally well on the cloze test measure.

In order to test for the prediction that analytical subjects would perform as well as global subjects on the cloze test a t-test was used on the cloze test data. The high and low order statistics on the GEFT were considered in order to determine a subject's relative analytical or global information processing style, with values between 0 - 12 representing a global style, values between 15 - 18 representing an analytical style and values between 13 - 14 representing a combination of global and analytical information processing styles. The subjects showing a combined style were not considered in the following analysis. Results were not significant for global and analytical subjects' performance on the cloze test, i.e. global and analytical subjects performed equally well ($t=1.50$, $df=34$, $p > 0.05$). However, this was only true for subjects in the inductive classes. In the deductive classes analytical subjects performed significantly better on the cloze test than the global subjects ($t=2.9300$, $df=63$, $p < 0.01$).

The correlation coefficient (a number between -1 and 1, where 0 indicates no correlation and 1, -1 signify maximum positive and negative correlations respectively) between the cloze test data and the proficiency test data is $r=0.59$ for the deductive group, and $r=0.56$ for the inductive group. By itself, this is a conclusive result. If the data were normally distributed, then the significance probabilities would be $p<0.0001$ and $p<0.001$ respectively.

All gaze shift data were subjected to a t-test procedure to determine whether there was a difference in the direction of lateral eye movements between global and analytical subjects, as reflected in the GEFT scores and also between right-handers and non-right-handers. Except in one case, no significant differences were found, thereby failing to confirm predictions 4, 5 and 6 of the experiment. The only significant result was obtained for the correlation between global or analytical males and 'stares'. However, it must be noted that the direction of this relationship is opposite to that predicted. That is, analytical males showed more 'stares' than global males.

Correlations between LEM and handedness and masculinity-femininity were also found to be non-significant.

Discussion

The results obtained by independent measurements show that global subjects do well in the inductive method since this type of second language learning method corresponds to their cognitive style. The inductive method may correspond better to the greater specialization of the right hemisphere for configurational-gestalt processing. As the findings show the reverse was true for the global subjects in the deductive method. They performed considerably less well than their global counterparts in the inductive method. The grammar-translation approach of the deductive method might have been in contradiction with their inherent information processing style that is said "to follow the organization of a field as presented" (Witkin et al., 1971:7). This information processing style, however, cannot be successful in a deductive approach, where the learner is required "to overcome the organization of the field, to break it up in order to locate a sought-after component" (Witkin et al., 1971:7). The finding seems to indicate that the global learner learns best with a method that suits his cognitive style of information processing.

The analytical person, on the other hand, is likely to impose structure on any field, or experience items as discrete from their backgrounds. He will be a successful learner with a deductive method, which favors the articulated style of information processing. Similarly, he will be a successful learner in the inductive group, since, because of his structuring strategy, he will

not be 'lost', a phenomenon that might easily occur to a global learner in a deductive group.

The finding that both groups, deductive and inductive, did equally well on the cloze test seems to reflect the comparable progress both groups made during the school year towards learning of the second language. None of the classes appeared to have an advantage over the other, although learning strategies as well as the material differed according to method.

The positive correlation between the cloze test and the proficiency test in the deductive and inductive groups demonstrates that the proficiency tests used in both groups are a valid instrument for measuring second language proficiency, since they correlate positively with the cloze test, which is known to be a good overall measure of second language proficiency.

Handedness scores did not correlate either with cognitive style as reflected by GEFT scores or with second language proficiency as measured by the proper use of specific syntactic and morphological rules. Hence a clear distinction must be made between cognitive style and lateralization of speech and visuo-spatial functions. As demonstrated in the literature there is an effect of handedness on lateralization of these functions, but our study shows that there is no effect of handedness on cognitive strategies. Cognitive style and lateralization of function are probably independent: this study shows that irrespective of how strongly an individual is lateralized for speech and visuo-spatial functions he can have a preference for either more global or more analytical cognitive style. The fact that a number of researchers selected only right-handers for inclusion in their studies appears to be indicative of their assumption that lateralization of function does, in fact, have an effect on cognitive style.

Whether or not there is a diffuse representation of functions, as expected in the left-hander, there are still strong cognitive styles which rely on visuo-spatial or analytic processing. Cognitive styles, however, do not rest on hemispheric preference, but rather on processing style irrespective of whether the underlying neural substratum is or is not clearly lateralized. These analytical and visuo-spatial functions might be shared by two hemispheres or could be strongly lateralized. Yet, this presence or absence of strong lateralization has no effect on cognitive style.

The results do not support the validity of LEM as a measure of cognitive style preference. The predicted correlation between LEM and cognitive style information processing as independently measured by GEFT were not present. LEM is not indicative of hemispheric specialization of functions since non-right-handers showed no different pattern of LEM than right-handers, and it is known that their lateralization pattern differs.

In conclusion, then, we can say that LEM is not a good measure of cognitive style or laterality; that handedness is irrelevant for determining cognitive styles; and that the cloze test is a good measure of assessing L2 proficiency, since it correlates positively with the proficiency tests of both deductive and inductive groups.

Some students, the analytical ones, are able to learn an L2 through explicit grammar instruction, however, some students, the global ones, must learn L2 in the way Chomsky describes learning of L1, which means implicitly.

Finally, when choice of method is available, the analytical students might preferably choose the deductive method and the global students might preferably choose the inductive method. Where, however, this procedure is not feasible and one method must be offered to all students, then it seems to be preferable to opt for an inductive method for the above mentioned reasons.

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THE EFFECTS OF RIGHT AND LEFT HEMISPHERE DAMAGE ON THE COMPREHENSION OF STRESS IN ENGLISH

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Chomsky regards "formal knowledge" as the basis of language. This is clear in the distinction he makes between "knowledge of language" and the "language faculty". Chomsky recognizes that there are at least three types of knowledge in "knowledge of language" -- knowledge of form and meaning, "conceptual" knowledge, and "pragmatic" knowledge. Yet, he argues that only the first constitutes "grammatical competence", or "the cognitive state that encompasses all aspects of form and meaning and their relation . . ." (1980a:59). According to Chomsky, grammatical competence is the basic cognitive relation of the language faculty (1980b:1).

Actually, Chomsky's goal is to describe the "language faculty", rather than knowledge of language as a whole. Accordingly, he argues that it is necessary to study grammatical competence in isolation from pragmatic or conceptual knowledge. Thus, he notes, the "languages" of the linguists' idealizations are not those of ordinary discourse, for the latter "incorporate elements derived by faculties other than the language faculty and hence depart in certain respects from principles of universal grammar" (1980a: 28).

I believe that the "language faculty" may be better described as the system governing the interaction of formal, conceptual, and pragmatic rules which together constitute "knowledge of language". Given this redefinition, the goal of the linguist is not only to describe the formal structure of language and the formal constraints on language, but also to formulate a theory of the way in which the individual integrates formal, conceptual, and pragmatic knowledge in the normal comprehension and production of language.

The study of neuropsychological mechanisms underlying the ability to produce and comprehend speech sheds light on the way in which the various components of language are related and interact. Ever since Broca (1861) linked the production of language to the left hemisphere, the dominant view of cerebral organization has been that the left hemi-

sphere is linguistic and the right is not. Recent studies suggest, however, that the hemispheres are not specialized for particular kinds of stimuli, but for particular kinds of processing. Witelson (1977) asserts that the cognitive processing of the left hemisphere is linear, sequential and analytic, whereas that of the right is synthetic and holistic (cf. Klatzky & Atkinson, 1971). Most complex cognitive activities, including language, appear to involve both kinds of processing. Thus, as Luria and Simernitskaya (1977) note, "In place of a sharp distinction between the verbal and the non-verbal, each assigned to its respective cerebral hemisphere, we have to think rather in terms of a variety of factors involved in the organization of psychological processes and of a hierarchy of functional levels in their representation" (175).

The results of the tests I have been conducting suggest that both hemispheres are indeed involved in normal language processing, but that each hemisphere is involved in a qualitatively different way. The left hemisphere appears to work from the bottom up, analyzing information sequentially and arriving at the overall pattern. It is, therefore, best suited for the kind of sequential analysis necessary for phonological, morphological and syntactic functioning. The right hemisphere, on the other hand, appears to work from the top down, beginning first with the overall pattern and working to fill in the details. The right hemisphere is thus best suited for the analysis of context. Needless to say, each hemisphere works more efficiently with the aid of the other.

This model accomodates the active, dynamic nature of language by allowing for the pattern of interaction to change in response to grammatical, conceptual, contextual, and individual variables. Thus, the importance of the role each hemisphere plays in any given speech act depends on the extent to which its particular kind of cognitive functioning is needed, as determined by such factors as the nature of the task, the context within which it is performed, and individual cognitive strategies.

To test this hypothesis I gave subjects with unilateral right or left hemisphere lesions, and a matched, neurologically normal control group, a number of tasks requiring judgements based on stress contrasts. The variable of stress seems appropriate for such a study, first because stress functions in units of different length, and second because stress placement varies in the extent to which it is predicted by either grammatical rules or by grammatical and situational context.

SUBJECTS: Sixty-three subjects took part in this study; seventeen of the subjects (fourteen males and three females) had unilateral left hemisphere lesions, sixteen (seven males and nine females) had unilateral right hemisphere lesions, and thirty (five males and twenty-five females) were neurologically normal. The average age of those in the left-damaged group was sixty-one, the average age of those in the right-damaged group sixty-nine, and of those in the normal group, sixty-six. All subjects spoke English as their native language. Brain damage was verified through subject's medical records. According to medical records and therapists' evaluations, none of those in the right hemisphere group had any language problem; sixteen of the seventeen subjects in the left-damaged group were receiving therapy for assessed aphasic disorders.

METHOD: The eight tests used in this study are as follows:

Test 1 -- subjects were asked to make same/different judgements of single word pairs (e.g. pér mit vs. per mít)

Test 2 -- subjects were asked to point to the picture (choice of 4, 2 representing stress variants and 2 foils) of the word heard. The words used in this test were the same as in test 1 (e.g. point to the picture of pér mit/per mít).

Test 3 -- subjects were asked to choose a picture (choice of 4; the same pictures used in test 2) in response to a sentence containing one of the same words used in tests 1 and 2 (e.g. That's the family's pérmit/If the families permít).

Test 4 -- a same/different test requiring judgements of compound nouns and their adjective-noun counterparts (e.g. green-house vs. green house).

Test 5 -- a same/different test requiring judgements of three word phrases (e.g. an orange tree grower vs. an orange tree grower).

Test 6 -- the same type of test as test 2 using the compound noun/adjective-noun pairs from test 4 (choice of 4 pictures, 2 stress variants and 2 foils).

Test 7 -- the same type of test as tests 2 and 6 using the three word phrases from test 5 (choice of 2 pictures, each representing a stress variant).

Test 8 -- the same type of test as test 3 using (A) the compound noun/adjective-noun pairs from test 4, and (B) the three word phrases from test 5 (the pictures used in this test are those used for tests 6 and 7).

The tests were recorded on a reel-to-reel tape and played to the subject on a Wollensak 3M model 1520 at a speed of 7½. There was a five-second delay between each test item in a same/different pair. Subjects did no reading or writing; they responded orally, "yes" or "no", or "same" or "different" to the same/different items. For those who found it difficult to respond orally, cards were used, one of which read "yes" and portrayed two identical triangles, and the other "no" and a triangle and a circle. For the other tasks the subject had only to point to pictures. Each test was explained to the subject before the test, as were the pictures used with the test. Example questions were used to ensure that the subject understood the demands of the task. Subjects heard each item once, yet were allowed to have an item repeated if they so desired. Tests were always given in the same order.

RESULTS AND DISCUSSION:

The tests were analyzed in terms of % correct. To compensate for the difference in the number of subjects in each group, the data were treated with an arcsin transform. All analyses were conducted on both raw and transformed data.

My hypothesis that the interaction of the two hemispheres is task-determined originally led me to predict that the stress cue would sometimes be processed by the right hemisphere and sometimes by the

left depending on the type of unit involved. The analytic left hemisphere seemed better suited to process the stress contrast between two syllables in a single word, and the holistic right hemisphere seemed more suited to process the stress distinctions that occur across word boundaries and over longer units. Subjects with right hemisphere damage should have been able to perceive stress contrasts between two syllables within single, non-compound words, but not stress contrasts in longer phrases or compounds; subjects with left hemisphere damage should have had a reverse impairment. But my study did not support this prediction. The overall performance of the left-damaged group did not differ quantitatively from that of the right-damaged group; the performance of both brain-damaged groups was significantly poorer than that of the normal control group (p = .05).

SCORES (% correct)

Group	Tests					
	1	2	3	4	5	6
R	75.3	46.18	60.	75.3	75.28	61.29
L	73.28	49.37	54.11	80.56	75.84	53.7
N	94.64	66.62	79.66	97.99	96.42	81.3
	7	8A	8B			
R	56.84	59.	47.			
L	52.91	56.	56.			
N	57.97	82.6	60.			

Nevertheless, although quantitatively the same, the performance of the two brain-damaged groups appeared to differ qualitatively. An error analysis of the results showed that although the two groups made the same number of errors, they made different kinds of errors.

The results of the same/different discrimination tasks (tests 1, 4, 5) were analyzed first. On test 1 the more common error for both the normal and the left-damaged groups was to judge different items as the same rather than the reverse; the right-damaged group made both types of errors equally as often (p = .001). On test 4, the left-damaged group tended to judge different items as the same (70 errors of this

type out of a total 99 errors), whereas the right-damaged group tended to judge the same items as different (70 errors of this type out of a total 110 errors). This difference was significant at the $p = .02$ level. Normals made few errors and made both types of errors equally as often. On test 5, normals as well as those with left hemisphere damage more commonly heard different items as the same; again the right-damaged group made the reverse error significantly more often ($p = .001$).

These results suggested that subjects with right-hemisphere damage use a different processing strategy than those with left-hemisphere damage. The first prediction I made was incorrect; the idea that there is a task-determined separation of labor between the two hemispheres is too narrow. In fact, the hypothesis of bilateral language processing suggests that both hemispheres are involved in every task, although the importance of the contribution made by each in any given task might vary. In the event of brain damage to one hemisphere the individual would have to rely more on the cognitive processing strategy of the intact hemisphere. Thus, it appears more accurate to conclude that the subjects with left-hemisphere damage relied on the holistic processing of the intact right hemisphere in performing the stress tests; the subjects with right-hemisphere damage relied on the analytic, sequential processing of the left.

The types of errors made by each group support this second interpretation. The subjects with right hemisphere damage appear to perform temporal, sequential processing and are able to analyze all the "grammatical" cues in an item; yet, without the holistic processing of the right hemisphere, they are unable to grasp the whole pattern. As a result, they are likely to give greater importance to non-distinctive cues and less likely to perceive that a given cue is one heard before. This results in the random pattern of error seen with the right-damaged group on the first stress test. It is likely that the more complex the item, the greater the need for information concerning "the whole picture" in which to fit the analysis of "detail". This would account for the increased difficulty the right-damaged group had in perceiving similarities at the two- and three-word levels (tests 4 and 5).

Those with left-hemisphere damage, on the other hand, appear to have intact the ability to process information holistically or contextually. Yet, although they are able to grasp the whole pattern, their ability to make fine distinctions, which would depend on left-hemisphere temporal, sequential

processing (cf. Efron, 1963; Swisher & Hirsh, 1972; Lackner & Teuber, 1973), is impaired. They are, thus, much more likely to blur the distinctions between two items and, as they did on the above mentioned tests, hear elements that are different as the same.

This reliance on a particular type of processing is evident as well in the performance of the two brain-damaged groups on the other stress tests. Tests 2, 6, and 7 were identification tasks in which the subject had only to point to the picture corresponding to the word or phrase heard. The subject had only the cues available in the word or phrase itself; no additional grammatical or contextual cues were provided.

Neither brain-damaged group was able to distinguish accurately between the noun and verb forms on test 2, although the fact that there were few random errors suggests that members of both groups were capable of some phonological analysis. Interestingly, the left-damaged group did slightly better than the right-damaged group on this test. The difference is not significant, but the pattern is that predicted by the hypothesis. Although there are no strict rules determining the placement of stress in the noun/verb pairs used in this test, there was a pattern to the stress placement; nouns received stress on the first syllable and verbs received it on the second. This may have made the task somewhat easier for those able to perceive the pattern -- the left-damaged group.

At the compound noun/adjective-noun level of test 6 stress is predictable and appears to result from the application of regular phonological rules. Thus, there is grammatical information as well as pattern to reinforce the interpretation of the stress cue. The performance of both brain-damaged groups improved somewhat on this test. That this time the right-damaged group did slightly better suggests that the grammatical rule alone is a slightly stronger cue than pattern alone; that neither holistic nor analytic processing alone is sufficient is demonstrated by the significantly better performance of the normal subjects.

At the three-word-phrase level tested in test 7 there are neither grammatical cues nor holistic contextual cues to the placement of stress. In the absence of additional cues, the judgements could go either way, as, in fact, they did. All three groups scored at a near chance level.

The results of these identification tasks demonstrate that the holistic processing underlying the ability to analyze context and detect general patterns, and the temporal, sequential processing

underlying the analysis of detail and the application of rule systems are both necessary for carrying out language tasks. Although the ability to perform the grammatical analysis may be more useful and efficient than the ability to perform a contextual analysis, at least at this level, it alone is not enough.

This is further demonstrated by the results of identification tasks in which the word or phrase to be identified (i.e. matched to a picture) was put into a sentence context.

Test 3 was a test of the subject's ability to discriminate the noun form from the verb form when it was embedded in a sentence context. In the sentence context, the weak cue to word class (i.e. noun or verb) provided by stress will, in fact, be redundant, for the noun will be distinguished from the verb by grammatical context. According to the hypothesis, right-damaged subjects will profit from the additional grammatical cues. The hypothesis predicts that left-damaged subjects, although impaired in their ability to make use of grammatical cues, will benefit from the information provided by overall context, as well as by the pattern of stress placement noted earlier. The performance of both groups on test 3 did, in fact, show a significant improvement over their performance on test 2 where they identified words in isolation.

Again, the poorer performance of the left-damaged group suggests that impaired analytic processing is less easily compensated for on such tasks as these than is impaired holistic processing. It may be, however, that there were simply many more grammatical cues than contextual ones of which to make use. Indeed, the task may have proved so difficult for normals simply because of the lack of contextual cues needed to augment the grammatical ones.

At the two- and three-word levels, tests 8A and 8B, the sentence context provided no new information, contextual or otherwise, and scores of all three groups remained virtually the same as those obtained on tests 6 and 7 in which the phrase was identified in isolation.

The results of this study demonstrate that, following brain damage in one hemisphere, the individual processes information in a manner determined by the cognitive strategy of the intact hemisphere. That neither hemisphere alone can adequately compensate for the loss of the other provides evidence that the right and left hemispheres complement each other in normal language processing. In analyzing an utterance, for example, the right hemisphere begins by searching the context,

grammatical as well as situational, for the expected pattern. It then works from the general to the particular to fill in this pattern. Thus, the more common an element, or the more expected given the context, the more easily it is processed by the right hemisphere. The left hemisphere, on the other hand, begins its analysis of an utterance with the smallest elements and works up to the whole. The ease with which the left hemisphere is able to process elements of language is, thus, an indication of the number of rules or steps required to make the analysis. The relative importance of "context" or "pattern" versus "detail" provides an indication of the extent to which the hemispheres interact for an accurate analysis of the message.

These results provide evidence that normal language is the product of the integration and interaction of different kinds of cognitive processing, the kind underlying knowledge of form, the grammar, as well as the kind underlying one's grasp of contextual, societal, and behavioral patterns or norms. It is the system by which we integrate these that is our "knowledge of language", and it is the innate ability to develop this system, and the innate constraints upon its development that constitute the "language faculty" of the brain.

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AUDITORY VERBAL DISCRIMINATION IN APHASIA*

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This paper discusses some aspects of the testing of auditory verbal discrimination (AVD) in aphasia in general and in bilingual aphasia in particular.

Every diagnostic test of aphasia includes a section in which AVD is tested. In very few cases, however, does the test of AVD include a clear formulation of the nature of the ability that is purportedly being measured. On the surface, it may seem fairly obvious that a test of AVD will test the individual's ability to recognize and discriminate between the sounds of a particular language. However, in tests that require the scoring of some overt response to a stimulus, this above definition of the task may be (and has been) operationalized in at least three different ways:

1. The ability to discriminate sounds. (acoustic ability)
2. The ability to discriminate phonemes. (phonemic ability)
3. The ability to associate an acoustic stimulus with an appropriate referent. (lexical ability).

Each operationalization of the task places constraints on the types of test stimuli that may be used. For example, if acoustic ability is being measured, then there is no principled reason for not using nonsense syllables as stimuli. Under the assumption that lexical ability is being measured, however, these would be completely inadmissible as stimuli because nonsense syllables, by definition, do not have real-world referents.

Thus the three operationalizations may be seen as forming an ordered set such that lexical ability implies phonemic ability and phonemic ability implies acoustic ability. Under this ordering lexical ability also places the greatest constraints on the test stimulus employed and acoustic ability places the least.

Though different in other respects, each of these formulations crucially involves the notion of minimal pair. In this the difference between the following word pairs is captured:

(1) PAT/BIT
(2) PAT/BAT

Although both (1) and (2) contain pairs of non-identical words, the similarities between the words in (2) are greater than those in (1). In fact, the words pat/bat form a minimal pair. The general notion of minimal pair can be defined as follows:

When X and Y are both members of class J, Y is minimally different from X if and only if there is no member of J that is more similar to X than Y is.

The above is but a preliminary definition for it assumes the existence of some quantifiable unit of difference with which members of a pair can be compared. Generally the Chomsky and Halle (1968) system of distinctive features is used. One notable exception is the use of the Miller-Nicely system (1955) in the Distinctive Feature Discrimination Test (McPherson and Pang-Ching 1979).

Throughout the paper I will attempt to highlight the fact that assumptions that a test makes determine to a great extent the results that will be obtained and hence the comparability of test results. I will argue that in tests of AVD in aphasia, a uniform level of measurement is needed and that the level of phonemic ability is the most appropriate.

It seems to me that the constraints placed on test stimulus selection by acoustic ability are too weak and somehow prelinguistic. A test of AVD in English, for example, should not include PAT/PhAT distinctions nor should it include the discrimination of various sorts of coughs (although different coughs may have language-specific communicative functions).

It seems also that the requirement of lexical ability is too strong. More importantly, this operationalization of the AVD task mixes AVD with lexical comprehension - an undesirable state of affairs given the statement above which characterized AVD as that ability which is required for comprehension. Consider the following situations:

Situation 1: The individual hears the pair BUT/BOUGHT. He knows that there exist two words in English one which is the past tense of the verb TO BUY and another which is a sentence connector of a sort. The individual's problem is that given an auditory presentation of the two, he can't tell which is which.

Situation 2: The individual hears the pair BOOT/BOAT. He is able to process them and arrive at the correct phonemic representation for each, but can't tell which is the one that you step into and which is the one that you step onto.

I think that it is clear that in situation 2 the individual's inability lies at the level of comprehension and not at the level of AVD. The type of inability portrayed in situation 1, the inability to process the phonemes of a particular language, properly falls under AVD.

In the following section I will consider the relationship between the above abstract considerations and actual techniques used in AVD testing.

Types of AVD Tests

In reviewing AVD test types I will assume that tests can be categorized and evaluated in terms of: (1) the type of stimulus employed and (2) the type of response elicited.

Stimulus type

AVD tests may use syllables, words, or sentences as stimuli. The decision to use one of these three is a decision about the amount of language in the stimulus. Although the interest in AVD testing is never above the level of minimally different words, these words are often imbedded in sentences for the sake of naturalness.

The greatest problem in increasing the amount of language in the test stimulus for the sake of naturalness is that doing so also increases the difficulty of the test item. This fact follows from the nature of minimal pairs. Consider, for example, the number of words that are minimally different from BAT: e.g. BIT, BAD, PAT, BOOT, etc. The problem is that the respondent does not know what aspect of the stimulus to attend to. As the length of the string increases, so does the number of possible contrasts. Therefore, all other things being equal, words are more difficult than syllables and sentences are more difficult than words.

We might consider in addition to the length of the individual test stimulus, the number of stimuli in a test item. Certain testing paradigms require that two or three stimuli be presented. This is true of all tests which require the respondent to judge stimuli to be identical or non-identical as in the following example:

1. Choose the sentence which is different from the other two.

   a. I don't like that either.
   b. I don't like that ether.
   c. I don't like that either.

Here we would expect that a respondent, particularly a brain-damaged one, would not only have difficulty figuring out which phoneme is being contrasted but would also have some difficulty holding the three sentences in short-term memory.

Clearly, in a linguistic test of AVD in aphasia we want to minimize the contaminating effect of non-linguistic factors such as short-term memory. It may be concluded that the more demands an AVD test places on short-term memory the more suspect is its content validity in the testing of aphasics.

Response type

There are three basic response types in AVD testing. The first type requires that the stimulus be reproduced correctly. The second type requires the respondent to match stimuli to either an orthographic representation or a picture. Finally the judgement type, as stated above, requires the respondent to make a judgement about the sameness of stimuli. The advantages and limitations of each of these three will be considered below.

Reproduction

In tests of this sort, a stimulus is presented and the respondent must either repeat what he has heard or write it down.

In principle, this should be the ideal response type because the respondent reports exactly what he heard. In fact it is an excellent technique but is usable only if one is justified in making the crucial assumption that there is no production impairment in the response modality. This is not possible in aphasia testing. Therefore any test of AVD that employs this response paradigm is unsuited for inclusion in an aphasia test battery.

Matching

In this section I will argue that although matching AVD tests are popular in modern aphasia testing (e.g. Test for Phonetic Differences, Minnesota test, Boston test, W22 test, Rhyme test) they lack validity and produce unreliable results.

We can consider first the type in which the respondent listens to a word/sentence and must choose from a number of pictures the one which best corresponds to what he heard. There are two problems with such a test. The first is related to the selection of the alternatives. Taking a typical example, we can consider an item in which the word POP is presented and one must choose between a picture of a bottle of Champagne being opened, a top, and a street cop.

In this example the words are identical save for the place of articulation of the initial stops. The assumption that the test makes is that if the respondent hears COP or TOP instead of POP then he will choose one of the other pictures. The problem is that if the individual being tested has difficulty in distinguishing stops with respect to place of articulation, then there is no reason to believe that this difficulty would not extend to the final stops in the word. So, instead of hearing POP he could hear POT or TOT. We may assume that in tests in which the testee is forced to choose from the pictures presented he would choose - seeing no picture that corresponds to the word he heard - a picture at random.

Based on the above considerations, the conclusion that we must arrive at is that it makes little difference what pictures are used in a picture matching test. Because the contrast that the item is designed to test is only one of the N possible contrasts given the auditory stimulus, the probability that the inability to perform the task is a result of the inability to perceive the particular contrast is 1/N.

This problem is perhaps not as great as it seems. We might suggest that picture matching tests not use forced-response paradigms, i.e. not require that the testee choose one of the pictures but also allow for a "none of the above" response. Furthermore, we might also waive the requirement that a test item be able to supply both positive and negative information. In this way, we could defend the picture matching paradigm by stating that although we cannot make statements when the item is answered incorrectly, when the testee does answer correctly we can conclude that he is able to make the phonemic distinction being tested.

The second problem associated with the picture matching paradigm is straightforward and far more serious. In this type of test it is not phonemic ability but rather lexical ability that is being measured. In order to perform the task correctly, the testee must hear the word correctly and also "know it". In other words, if the stimulus presentation is not in the testee's vocabulary or if the testee has some other comprehension impairment then all the phonemic ability in the world will not help him to answer correctly. The type of test that we have been considering should properly be viewed as a test of oral lexical comprehension which makes the assumption that the testee can distinguish phonemes. As a test of AVD it is at best useless and at worst misleading.[1]

Judgement

In the discussion of stimulus type above, I presented an example of a typical test item that required a "difference judgement" on the part of the testee. In that section I also argued that this type of test item places contaminating demands on short-term memory. Therefore in the discussion below I will concentrate on the second type of judgement response item which is commonly referred to as the same-different paradigm.

The same-different paradigm is essentially equivalent to the different paradigm save for the fact that in the latter, two rather than three stimuli are presented. The patient listens to a stimulus pair and is asked to state whether they are identical or different. The presentations may be sentences, words, or syllables.

A key feature of the same-different paradigm is that it is,

in principle, content independent. In other words, although words and sentences may be used, understanding the string is not required to correctly perform the task. I will argue below that of all the alternatives this paradigm is best suited to the testing of AVD in aphasia. I will further argue that although the test paradigm is content independent, nonsense syllables rather than words or sentences should still be used.

The same-different test does not allow the measurement of AVD ability to be confounded by other variables such as production impairment or lexical comprehension. A study conducted by Blumstein, Baker and Goodglass (1977), however, found that in the testing of Broca, Mixed anterior, Wernicke, and Residual posterior aphasic patients using a same-different test of AVD, all patients scored roughly twice as high when real words as opposed to nonsense syllables were presented. The finding that this type of test is easier when words are presented leads to a problem in the testing of patients who may have comprehension impairments. If the patient cannot recognize a word as a word of the language then that word is to him no different from a nonsense syllable. The consequences of this - if I am interpreting Bloomstein's results correctly - is that the same-different task should be twice as easy for an aphasic patient with no comprehension deficits than it would be for the same aphasic with a (severe) comprehension impairment. For this reason I suggest that a pure test of AVD ability must not use words but rather maximally simple (i.e. CV) nonsense syllables.[2]

Another advantage of using simple CV type nonsense syllables is that it avoids the problem, mentioned above, of the existence of multiple minimal pairs for each word presented. Firstly, the same-different paradigm focuses the patient's attention on the contrast being tested and secondly, in the presentation of rhyming CV nonsense syllables, the patient can be made, in the training period before the test, to ignore everything but the initial consonant (or everything but the vowel in the testing of vowel discriminative ability).

Implications

To summarize briefly, at the outset of this paper I identified AVD as that linguistic ability which is required for comprehension. I argued that if this ability is to be tested great care must be taken not to conflate AVD with other variables, especially comprehension. It was suggested that this criterion of purity is best met by a same-different test of minimally different nonsense syllables. The discussion below will concentrate on the consequences of extending this argument to the testing of bilingual aphasics.

Bilingual aphasia

One of the major interests in the study of bilingual aphasia is whether AVD can be differentially impaired across languages. The use of the same-different nonsense syllable paradigm to test differential AVD impairment, however, leads to a strange paradox. The paradox arises from the fact that the paradigm tests the perception of phonemes of the language but doesn't test them in the language.

So, in the testing of German-English bilinguals, for example, lexical comprehension might be measured by asking the patient to select a "lighter" from a set of objects on a table and then, on another occasion, asking the patient to do the same in German, i.e. select "Feurzeug" from a similar set.

The crux of the empirical question of AVD in bilingual aphasia is whether it makes any sense to do the same for phonemes i.e. to ask the patient to distinguish PA/BA in English and PA/BA in German. We may operationalize this by asking what the possible outcomes could be in the following test paradigm: A bilingual patient is presented with PA/BA spoken by a native speaker of English and, on a separate occasion, with PA/BA spoken by a native speaker of German.

Here two theoretical positions emerge. The first position would claim that whatever phonetic differences exist between the German [B] and the English [B], they are both represented as the same abstract segment /B/. Thus the position would claim that in the bilingual same-different paradigm described above, the same stimulus is merely presented on two occasions.

The second position would make opposite claims. It would state that the normal English-German bilingual can always differentiate the English [B] and the German [B] such that he always knows that one belongs in an English word and the other belongs in a German word. Taken this way, the difference between the two is at least phonemic and the test paradigm under discussion actually presents four phonemes which may be represented as: $/B^{Eng}/$, $/p^{Eng}/$, $/B^{Germ}/$, $/p^{Germ}/$.

In the remainder of this paper I will examine what conclusions about the organization of phonemes in the bilingual can be arrived at given the two theoretical positions above and also given the two types of AVD impairment in bilingual aphasia that could possibly be observed. The two possibilities are: (1) bilingual aphasics do show differential impairment across languages with "shared phonemes" and (2) bilingual aphasics never show differential impairment (never is admittedly a long time). The four possibilities may now be listed:

1. Identical AVD impairment - Same phoneme across languages
2. Identical AVD impairment - Different phonemes across languages
3. Differential AVD impairment - Same phoneme across languages
4. Differential AVD impairment - Different phonemes across languages.

If the first case were that which is observed we would be led to conclude that in the bilingual shared phonemes are represented in a single store. Those phonemes which the languages do not share would then be language tagged. This we can consider to be the null hypothesis in the absence of any data.

The second case seems to involve a contradiction. If languages have different phonemes then the paradigm tests four phonemes and examines the patients ability to distinguish between two distinct pairs: p_{Eng}/b_{Eng}, p_{Germ}/b_{Germ}. Why, if they are different, should they always suffer impairment together? I think that to account for this phenomenon we would have to invoke the 'cortical reality' of abstract phonological features. The difference between p_{Eng}/b_{Eng} and p_{Germ}/b_{Germ} are both a matter of voicing. It would have to be concluded, then, that the feature itself is subject to impairment in aphasia.[3]

The third case would require explanation in terms of psychological set (or a switching mechanism) and the redundant representation of phonemes in different language-specific stores. This is required for the explanation of the differential impairment of identical phonemes based on linguistic context. If this situation were to obtain it would be the most counter-intuitive of the four possibilities. With phonemes redundantly represented in separate stores one can only wonder which store would be accessed in a presentation of nonsense syllables which is context-free to the extent that psychological set could not be used as a cue.

Finally, in the fourth case, explanation could involve either different language stores of phonemes or the language tagging of phonemes within a store (assuming the difference between such metaphors is preserved in actual cortical representation). This situation differs from the third in that explanation of the observations would not require recourse to psychological set to determine which language will be activated upon the presentation of nonsense syllables.

The above has but provided a sketch of the conclusions that could be supported given each of the possible combinations of evidence in the AVD testing of bilingual aphasics using a same-different nonsense syllable test. The purpose of this sketch is to illustrate the ways in which this test paradigm can offer insights into the nature of phonemic processing in both aphasic and normal bilinguals.

The advancement of research in this area requires two courses

of action: (1) An empirical investigation of the ability of normal bilinguals to identify nonsense syllables as belonging to a particular language, and (2) the inclusion of pure AVD tests in bilingual aphasic test batteries such that data on the frequency of differential AVD impairment may be collected.

NOTES

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[1] Although the term AVD will continue to be used here it should be noted at this point that Auditory Phonemic Ability (APD) is perhaps a term better suited to the phenomenon.

[2] Michel Paradis has pointed out to me that in some languages, for example French, it is very difficult to find CV syllables that do not form words. In such cases it might be necessary to create nonsense syllables where the vowel is a diphthong or, if absolutely necessary, to use CVC syllables. This property of some languages does not pose a very serious problem to the implementation of the paradigm in AVD testing because we assume that the training period will play a major role in focusing the patient's attention away from the part of the syllable that is not being manipulated.

[3] Note that this is different from the monolingual situation in which, even if the subject can perceive no voiced/unvoiced distinctions, the claim that voicing is impaired has no status beyond that of abbreviation.

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NARRATIVE COMMUNICATION TYPE VS. NARRATIVE TEXT TYPE: EVIDENCE FROM DYSPHASIA

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1. Linguistics as auxiliary science in interdisciplinary research.
2. Texts as communicative acts: Clinical approaches to text comprehension.
3. Experimental approach: 3.1. Syntagmatic vs. 3.2. paradigmatic processing in the narrative medium.
4. Narrative Text Type Performance: Cohesive devices.
5. Dysphasic syndromes: Autonomy of Narrative Communication Type vs. Narrative Text Type Performance.
6. Clinical empiry and linguistic theory: Explanatory adequacy.

1. Scientific inquiry occupied with the cognitive and communicative functions of language in use center on the multidisciplinary notion of text. Researchers in this field (e.g. AI, text science, aphasiology, 'hyphenated-linguistics'[1]) regard linguistics as an auxiliary science with, hopefully, descriptive adequacy. Taking Chomsky's slightly pathetic preliminary "... much higher goals than this...be pursued" as survival kit for linguists in an interdisciplinary paradigm, we react to a clinical approach on text comprehension in dysphasia. We will give an example where linguistic theory throws explanatory light on clinical empiry.

2. The definition of text as a verbal record of a communicative act[2] seems to be vague enough to capture the multidisciplinary demands sketched above.

Clinical aphasiologists in Germany developed the pragmatic dimension of text = a communicative act into a Text Comprehension Test (focusing on contextualization) and a study on Text Experiments with Dysphasics, respectively[3]. Both research groups come to the general conclusion that normal speakers and dysphasic subgroups show quantitative grading but no qualitative disparities in text behaviour. Furthermore Engel claims that dysphasics react text type specific, as they are able to depict the correct text frame and to select the specific text genre[4]. These results were obtained while testing dysphasic propositional-based text performance in text types interview and text reproduction.

Our own experiment also is embedded in the language and perception complex[5]. We analyse spontaneous transcodings of a visual narrative manifested in the English language (dysphasics n= 28, normal speakers n= 12). As linguists, however, we want to consider Halliday's warning: "A purely extrinsic account of linguistic functions (in the above cases: contextualization), one which is not based on an analysis of linguistic structure, will not answer the question"[6]. In this context we interpret the above conclusions as for linguistic inquiry too general. We therefore shift our focus from the communicative to the verbal act dimension of our text definition with the aim to trace - under the linguistic representational point of view- qualitative differences between dysphasic text performance vs. that of normal speakers.

3. We base our experiments on the concept of story grammarians: Content is represented as a hierarchy of propositions. We assume that narratives are 'langues' -independent of any medium- conveyed through the 'paroles' of -in the case of the experiment - actual verbal texts . Text in this instance is the model - or abbreviation- of the narrative under the productive process of "effort after meaning": Story communication is highly related to the capacity of the text participant to choose which events and objects actually to state and which only to imply in his discourse[7].

3.1. Story processing demands an integrative sequencing of "knowing what" and "knowing how"[8]. The Facts (what?) function as variables or 'slots' on the virtual global organization structure. According to the tria loca we can delimitate at least three varibales, i.e. obligatory 'slots': orientatio, complicatio, resolutio. To become ordered or to assign other structures to the categorical built-up of the narrative, the "what?" has to be mapped onto the "how?" to ensure sequential continuity. The syntagmatic axis of story processing can thus be described as an integrative mapping of the conceptual and sequential organization structures. We term this a Virtual Narrative Communication Type (VNCT) as it conventionally relates "psychological wholes" (=slots) of stories syntagmatically within a specific culture. A VNCT functions as a schema for narrative mimesis.

3.2. Labov/Waletzky showed though, that mere sequential ordering of variables or 'slots' - which they term "referential narrative", may be considered "empty" or "pointless" narrative. Usually, they argue, narrative serves an additional function of personal interest -the evaluative function.[9] This implies a qualitatively different processing of the narrative: The sequential organization structure is 'invaded' by -as the proceduralists might term it- 'proof procedures'. Linguistically speaking we can say that the paradigmatic semantic axis is actualised: The syntagmatic variables or 'slots' of the VNCT can be supplemented by paradigmatic 'fillers'. We term this type of narrative processing that integrates evaluative proof procedures into the process of

reference Actual Narrative Communication Type (ANCT).
We would like to present the complementary concept of VNCT vs. ANCT graphically:

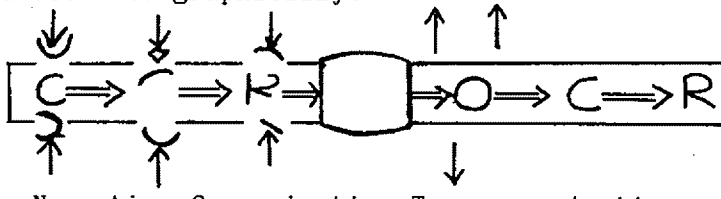


Fig. 1: Narrative Communication Type organization structure (VNCT) and integrated proof procedures (ANCT)

⟹ syntagmatic axis: story schema

⟶ paradigmatic axis: proof procedures

VNCT: narrative problem solving

ANCT: actual story performance

integrative processing: denotation plus evaluation

Looking at dysphasic narrative performance we find that the virtual variables seem to be traceable even in rudimentary texts, where the apparatus of cohesion is squeezed to the minimum that grammar will permit[10]. The ANCT performance seems to be reduced to the micro-level as subsidiary strategy in conceptual-referential problem solving, witness

Dick (posterior lesion) (1) this girl has just
(2) or boy
(3) ah father and son

If we recall Halliday's warning (see 2.) at this stage we have to admit, however, that so far -in the tradition of clinicians sketched above- we have reduced our analysis to the pragmatic aspect of the text notion and neglected the verbal record. If we accept Cohen's view that the situative cognitive functions seem unimpaired in dysphasics[11], we have to explain why dysphasics -generally speaking- cannot perform on the ANCT level. As seen in Fig. 1 ANCT performance demands integrative processing, and we can assume that more complex linguistic representation devices are needed in order to make paradigmatic insertions explicit.

4. Following Halliday/Hasan's claim "that it is the linguist's job to deal with explicit (i.e. verbal) representations of meaning relations"[12] we want to technically emphasise that texts are encoded in a specific system. As we learn from NCT processing, it is not enough to have access to a general communicative part of the system (VNCT) based on knowledge of text worlds but also to a more situatively specific linguistic part of the system (to reach ANCT level), i.e. the lexicon. Certain lexical choices signal textual cohesion by explicitly representing meaning relations. We thus modify our definition of 'text': Text is the situative actualization of a virtual system 13. Specific linguistic techniques have to be situatively actualized in order to be able to communicate on a (linguistically seen) textual level. We differentiate between primary and secondary linguistic devices to establish textual cohesion:

(i) Primary cohesive device: Pronominalisation
According to Harweg 1968:148 text is constituted through uninterrupted pronominal substitution which establishes a semantic chain of anaphoric and cataphoric (Halliday would specify this as endophoric) references.We regard this together with renominalisation[14] as the basic syntactic technique of text processing. It enables the text-participant to stage new vs. old information (pronominalisation) or to specify given information (renominalisation).

(ii) Secondary cohesive device: Metalingual markers
Gülich/Raible argue that the global superstructure of a text is signalled linguistically on the surface structure[15]. Considering the NCT as the superstructure for narrative text performance we demand that each variable or 'slot' is signalled lexically. We differentiate between metalingual markers of syntagmatic narrative structures (VNCT) : temporal markers and markers of paradigmatic insertions (ANCT) : evaluative markers.

Metalingual markers function as virtual signals for actual processing strategies, and thus do not only relate the story to the discourse pattern but also relate the part/whole structures for the listener.

We claim that the adequate choice of primary and secondary textlinguistic cohesive devices is the prior condition for Narrative Text Type performance (NTT): Not only have patterns in use (NCT) be selected and ordered but made explicit in the system the text processor is using.

5. As all dysphasic syndromes show lexico/semantic impairment[16] we can show -as expected- that dysphasics not only fail on the primary device of textlinguistic microsyntax, but also on the secondary device of textlinguistic macrosyntax. We can specify, however, that not the general actualization procedure is impaired but access to specific lexicon entries: Dysphasics only perform on the level of elementary metalingual markers, i.e. additive and, adversative but, causal so, temporal then[17].

In order to signal part/whole relations on a macro level the text processor has to situatively specify the elementary signals, e.g. in the narrative the temporal marker into then + immediately (at once, thereupon etc.) then + repetition (next time etc.) and activate the evaluative signals, respectively.

The qualitative gap between dysphasic and normal text processing can be summarized as that the former are impaired in the situative actualization of the markers of the system. On the microsyntactic level they tend to neutralize the opposition of full form and proform or violate the syntagmatic principle that given information has to precede new information, whereas on the macrosyntactic level of linguistic signalling their impaired access to the lexicon allows only elementary (and thus local) marking: The dysphasics can present parts, but not a story as a whole[18]. As with the parts they are able to transact verbally their denotation process (referential function of the narrative) - (and if only in "information injections" to use Grimes' term) - we conclude that they are not impaired on the level of communication type performance (more specifically VNCT).

As normal speakers activate essentially communicative strategies in narrative problem solving 19, and on the grounds of Cohen's view that referential- situational cognitive functions seem unimpaired in dysphasics -supported by our experiment- , we find more empirical evidence for Blumstein's observation that "at least for the adult, the perceptual and production systems are partially autonomous"[20]. This agrees with our own results that dysphasic production deficits are linguistic in nature, which led us to the technical set apart of Text Type Performance vs. Communication Type Performance. Though dysphasics seem to show no qualitative regression in Narrative Communication Type performance, they fail to perform successfully on the more specifically linguistic level of Narrative Text Type performance.

6. We still have to comment on Engel's result (see above under 2.) that dysphasics react text type specific. This runs contrary to our own findings above. We want to throw light on this obvious controversy by applying a textlinguistic model that, on the asssumption that text can be viewed from textinternal plus textexternal criteria discriminates text types technically from communication types[21].

Gülich/Raible classify five textexternal criteria which have to be satisfied if a text sample is to qualify as a manifestation of a communication type. If it wants to qualify as a manifestation of a text type, however, it can not solely be described by textexternal criteria but also has to meet specific textinternal criteria (witness our metalingual markers (4.(ii)) who function as textinternal border-signals for text type specific organization structures). Engel's "text types" 'interview' and 'text reproduction' -which by herself are defined according to one textexternal criterion[22]- can with the help of Gülich/Raible's model be specified with regard to two textexternal criteria: That of the same communication situation (patient and test instructor) and that of dialogue as communication direction. Engel's "text types" with this model turn out to be technically communication types. Clinical approaches as sketched in the beginning of our study can thus from a linguistic point of view be specified as studies on communication type performance. This explains why the clinicians can only depict quantitative grading between normal speakers and dysphasic subgroups: As our own results and that of Blumstein confirm, dysphasics are not qualitatively impaired on the level of referential-situational cognitive performance and thus able to perform on the communicative level. As Engel herself suggests: Dysphasic communication is essentially trying to establish communicative contact[23].

NOTES

[1]G. Sampson, Schools of Linguistics, London 1980:10 refers to socio-linguistics, psycho-linguistics and the like as 'hyphenated-linguistics' as they involve investigating the relationships between, let us say

sociology and a current linguistic theory irrespective of whether that particular version of linguistics urges one to think in sociological terms.

[2] Brown/Yule 1983:6

[3] The Aachen group (headed by K. Poeck, here: Stachowiak) tests text comprehension via contextualization in a text-picture matching test. See Stachowiak et al. 1977:188, 193 for the results.
The Konstanz group (headed by R. Cohen, here: Engel) builds on Kintsch's propositional-based approach on content, W. Kintsch, The Representation of Meaning in Memory, New York 1974:13.

[4] Engel 1977:178

[5] programmatic title of Miller/ Johnson-Laird 1976. We cannot here go into any detail as regards transcoding processes and visual information retrieval. This is dealt with extensively in Koll-Stobbe 1983:ch.3. Though I cannot here introduce my test procedures I would like to thank Ch. Shewell and E. Bridgman, Cambridge and London, for their help to find the right patients in their departments.

[6] M.A.K. Halliday, Language Structure and Language Function, in: J. Lyons (ed), New Horizons in Linguistics, Harmondsworth 1970:141

[7] our thoughts on narratives are modelled by de Beaugrande 1980, van Dijk 1980, Brown/Yule 1983 (various ch.s) and more specifically by S. Chatman 1978:24, 28, Rumelhart 1975:212f, Bartlett (repr.) 1977:20.

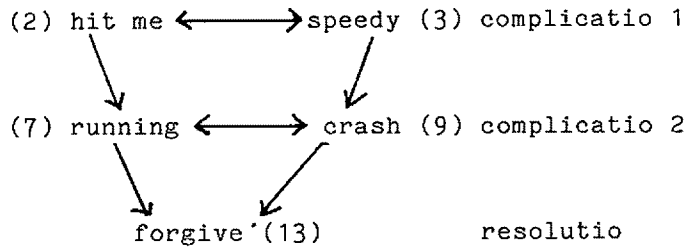
[8] we follow here the Russian formalist distinction between fable and sujet, which Chatman 1978:19 sums up as the "what?" (story) and the "how?" (discourse). Witness Winograd 1975:186 for the declarativists' and proceduralists' controversy.

[9] Labov/Waletzky 1967:13

[10] witness Charles (anterior lesion):

(1) /ts/ all eh ball	(7) running at me
(2) hit me	(8) no / it's difficult
(3) chap // spivy // speedy	(9) crash
(4) half past two	(10) son and father
(5) I wonder why	(11) please ball at me
(6) oh yes running	(12) happy with me
	(13) forgive son

In the context of our narrative with two complication variables, we can extract the VNCT structure as follows:



[11] R. Cohen et al. 1979:361

[12] Halliday/Hasan 1976:2

[13] witness de Beaugrande 1980:16, de Beaugrande/Dressler 1981:35, E. Gülich, W. Raible, Linguistische Textmodelle, München 1977:36, M.A.K. Halliday, Language as Social Semiotics, London 1978:137.

[14] we can regard pronominalisation as the textsyntactic default-operation (obligatory if not otherwise specified), whereas renominalisation is purely optional. See for the latter term: E. Gülich, K. Heger, W. Raible, Linguistische Textanalyse, Hamburg 1979:94ff.

[15] Gülich/Raible in: Gülich/Heger/Raible 1979:74 (see note 14).G/R use the term macrostructure in van Dijk's sense of the word superstructure 1980:108f: "the schematic form that organizes the global meaning of a text".

[16] e.g. G. Peuser, Aphasie, München 1978:110.

[17] here and in the following we use Halliday/Hasan's model, witness 1976:238f.,239, and 261.

[18] we cannot go into detail here as regards dysphasic subgroups, see Koll-Stobbe 1983:6.1.2.ff and 6.2.4.ff.

[19] as one experiment on semantic text operations showed, where a variable of the narrative structure could be either developed through a denotational process or an explanatory sense hypothesis (signification), see Koll-Stobbe 1983:7.2.ff.

[20] Blumstein 1981:252

[21] Gülich/Raible 1975:154

[22] Engel 1977:49

[23] Engel 1977:174

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IX

HISTORICAL STUDIES

THE TYRANNY OF POETIC FORM IN OLD ENGLISH

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Old English poetry is a structured poetry in which the poetic form consists only of the alliterative line, not a syntactic or grammatical line (alliteration is the initial sound rhyme of certain stressed syllables, such as Modern English rhyme and reason). Four stressed feet, two to three of which alliterate, make up the ideal line. Two processes, occurring simultaneously, create the alliterative line: (1) division of the line into two half lines by the caesura and (2) linkage of the resultant two half lines into one line by the alliteration. The half line is the grammatical building block of the line; each half line contains two stressed syllables and a complete syntactic unit, as in

(1) eald enta geweorc idlu stodon Wanderer 87
[the old work of giants stood idle]

where the a-line contains the subject noun phrase and the b-line the predicate of verb and object. It is only late in the Old English period that the alliterative line in which both the a-line and the b-line make up one complete grammatical unit becomes more common, a response to the changing structure of the language:

(2) on þyssum laenum life geearnaþ Dream of the Rood 109
[in this fleeting life earns]

(3) for man-cynnes manegum synnum Dream of the Rood 99
[for mankind's many sins].

For the entire period when the poetry was composed, over some 400 years, English was a transitional language - one changing its typological organization from SOV to SVO with the SVO characteristics increasing through time and the SOV ones concomitantly decreasing. As a result of this typological shift and, therefore, word order shift, by late Old English more function words were required. Furthermore, the case system was in disarray because of underlying semantic change (Collins, 1980), and word order was supplanting inflections (Collins, 1981). It was no longer possible to compose a poetry as highly organized as Caedmon's Hymn (ca. 650-700) in which each half line was a complete syntactic unit:

(4) Nu scylun hergan hefaenricaes Uard
Metudaes maecti end his modgidanc
uerc Uuldurfadur sue he uundra gihuaes

eci Dryctin or astelidae.
He aerist scop aelda barnum
heben til hrofe haleg Scepen;
tha middungeard moncynnaes Uard
eci Dryctin aefter tiadae
firum foldu Frea allmectig Moore Manuscript, 735 AD

[Now (we) shall praise the heavenly kingdom's guardian,
the Lord's power, and his wisdom,
the work of the glorious Father, as he of each of wonders,
the eternal Lord, the beginning established.
He first created for the children of men
heaven as a roof, the holy Creator;
the middleyard, the guardian of mankind,
the eternal Lord, afterwards adorned,
the earth for men, the almighty God].

The development of the alliterative line is easily seen as an answer to the need for a mnemonic device in a poetry that is oral, one recited by a scop in a great hall.

Each individual alliterative line is the complete unit - there is no linkage of one line to successive lines by the alliterative device. All occurrences of lines in which the alliterative sound of the second stressed syllable of the b-line (the only non-alliterated stressed syllable of the line) is repeated in the stressed syllables of the next line and seems to link the two alliterative lines is purely accidental; the choice of words available to the poet was restricted enough that this could happen occasionally, but analysis shows it was not a planned occurrence. Pseudo-alliterative line linkage with 'w' is shown in

(5) þaet he his giongorscipe fyligan wolden
wyrcean his willan; for þon he him gewit forgeaf
Genesis B, 249-50.

Only the word classes that carry the semantic load can alliterate: noun, adjective, adverb, and the verb in its finite, participial, and infinitival forms. These word classes receive sentence stress because they are semantically important, wherein function words, being just that, are usually unstressed in Old English, and, therefore, do not alliterate.

The five alliterative patterns that exist in Old English developed because the vocabulary forces their development; the vocabulary is limited in that naegl 'nail' begins with 'n' and not 'd', and, as well, no figurative form in 'd' seems to exist.

(6) þurhdrifan hi me mid deorcan naeglum on me syndon þa dolg gesiene
[they pierced me with dark nails: on me are the wounds

visible] (stressed syllables 1, 2, and 3 alliterate)

(7) þa Abraham sprace to his ombihtum Genesis A 2880
[then Abraham spoke to his servants] (stressed syllables 1 and 3 alliterate)

(8) Hwaet we Gar-Dena in geardagum Beowulf 1
[Lo, we (heard about) the Spear-Danes' (glory) in yore-days] (stresses 1 and 3, 2 and 4 alliterate)

(9) þonne aenig þara beorge þe her beorhte mid us Phoenix
[than any of the hills which here (are) bright among us] 32
(stresses 2 and 4 alliterate)

(10) þinceþ him on mode þaet he his mondryhten Wanderer 41
[it seem to him in (his) mind that he his lord...]
(stresses 2 and 3 alliterate).

Although hypermetric lines occur (lines of more than four feet), the alliterative patterns remain the same as in the regular lines; and only three of the six feet alliterate, and according to the five patterns given above. This provides more evidence to support the conclusion that the alliteration is a mnemonic device.

The metrical structure of the half line in many texts is treated as if it were part of the poetic form. However, the combination of stressed and unstressed syllables of the syntactic unit in the half line gives rise to the various metrical patterns (delineated first by Sievers in 1893). The same metrical patterns are to be found in the prose as well. The metrical structure is a natural attribute of the language, and a poet can control specific pattern occurrences only by word choice and word combinations. However, it is more probable that the metrical patterning found in the poetry and the prose is incidental to word choice - a natural happening. The syllabic makeup of the words, the stress patterns of the individual words, and the overall sentence stress are themselves separate from the poetic form, being natural parts of the language, but the poetic form interacts with them.

A consensus exists in current thought, more often implicit instead of explicit, that in Old English poetry, the language itself just doesn't permit the poetic form to occur in the shape it has but really dictates it, with the poet subconsciously conforming to the language demands, developing his poem according to the accepted poetic form within the constraints set down by the language. This consensus is reinforced by various modern poets who also state the same thought, e.g., T. S. Eliot in his lecture The Music of Poetry (1942). The reverse, that poetic form can dictate language use is inadequately considered, and occurrences of "poetic syntax" are often passed over lightly as examples of the poet's "sheer delight" in such divergences (cf. Cassidy and Ringler, 1971, 273) instead of the recognition that poetic syntax is

the result of meeting poetic form requirements. In the literature this variation is often attributed to poetic license - the poet was free to place the words where he pleased! Contrary to this interpretation, research indicates that for Old English, the poetic form requirement of alliteration and only alliteration actually causes the development of poetic syntax: a variation in word order and far more so than occurs in the prose. The unmarked SVO and SOV clause order occurs along with the marked orders OSV, OVS, VSO and VOS.

(11) he [subject] mid gare stang [verb] wlance wicing [object] (SVO) þe [subject] him þa wunde [object] forgeaf [verb] (SOV) Battle of Maldon 138-139

[he stabbed with a spear the proud Viking who gave him the wound]

(12) þa þaes rinces [object]se rica [part of subject NP] ongan cyning [subject noun] costigan [verb] (OSV) Genesis A 2846

[then the powerful king began to test the warrior]

(13) ac hine [object] þaer beheoldon [verb] halige gastas [subject] (OVS) Dream of the Rood 11

[but holy ghosts beheld him there]

(14) Sende [verb] þa se saerinc [subject] suþerne gar [object] Battle of Maldon 134 (VSO)

[the sea-warrior (Viking) sent then a southern spear]

(15) yþde [verb] swa þisne eardgeard [object] aelda scyppend [subject] Wanderer 85 (VOS)

[the creator of men ravished so this city].

One famous example of poetic syntax is the serious syntactic dislocation contained in Judith 11. 48a-54a.

(16)
þaet se bealofulla
mihte wlitan þurh wigena baldor
on aeghwylcne þe þaerinne com
haþela bearna ond on hyne naenig
monna cynnes nymþe se modiga hwaene
niþe rofra him þe near hete
rinca to rune gegangon

[that the baleful-one might see through, the lord of warriors, on each of the children of men who therein came, and none of the kin of man on him, unless the proud-one should command some one of the warriors, strong in evil,

to go the nearer to him for secret-council]

in which the first dislocation occurs in line 3 with the insertion of the relative clause þe þaerinne com between aeghwylcne 'each' and haeþela bearna 'the children of men'; the second dislocation occurs in line 4 where the adverbial locative on hyne 'on him' precedes the clause subject naenig 'none' and the required verb is omitted because it cannot match the line alliteration. Such gapping is permitted in Old English as the verb mihte wlitan þurh was previously given back in line 2. By far the most serious dislocation begins in line 5 where the direct object hwaene is separated from its genitive modifier rinca, found two lines below in line 7. Furthermore, the appositive of rinca, niþe rofra 'strong in evil' precedes rinca, being in the line before. The insertion of all of line 6 breaks up the normal order. In Old English a literal rendition of these lines is as follows: "unless the proud-one some one in evil of the strong him the nearer should command of the warriors for secret-council go". Placing all modifiers correctly gives the following properly ordered sentence: "unless the proud-one should command some one of the warriors, strong in evil, go the nearer to him for secret-council". This passage clearly shows that the demands of the poetic form - the alliteration - were met, the poetic form superceding the language requirements of normal syntactic order and consideration of semantic content, the poet apparently hoping that the hearers could decipher the meanings of the lines. Analysis of many other examples of poetic syntax involving severe dislocation leads me to believe that poetic syntax is nothing more than the poet's attempts to meet the demands and restrictions of the poetic form because of a vocabulary that could not fulfill all of the alliteration requirements within the limits of the language. Actually, many of the dislocations are termed in the literature 'cruxes'. One of these that shows even greater dislocation than the lines from Judith is as follows:

(17) for þon þaet eorla gehwan aeftercweþendra
lof lifgendra lastworda betst
þaet he gewyrce aer he onwege scyle
fremum on foldon wiþ feonda niþ
deorum daedum deofle togeanes
þaet hine aelda bearn after hergen Seafarer 72-77

[therefore, that praise of afterspeakers, of living ones, (IS) the best of lastwords for each of earls, that he work benefits on earth against the fiends' evil, with dear deeds against the devil, before he shall (GO/DIE) away, so that the children ofmen praise him afterwards].

A literal reading of the above is "therefore, that for each of earls, of afterspeakers, the praise of living ones, the best of lastwords, that he work before he away shall benefits on earth against fiends' evil, with dear deeds against the devil, so that him the children of men afterwards praise". In the Old English

original, the verbs BE and GO (to equal 'die') are omitted or ellipsed (lines 2 and 3); the subject lof occurs between the two genitives that modify it; in line 3b the clause aer he onwege scyle is inserted between the verb gewyrce and its direct object fremum; line 5 contains an appositive for the preceding clause þaet he gewyrce fremum on foldon wiþ feonda niþ; and the last line is in the syntactic order OSV, a marked order. Old English by its changing structure actually permits the stylistic and linguistic variation found in the poetry, but it does not dictate the poetic syntax. Whenever such occurs, analysis shows that the poetic form requirements cause its use - the alliteration requirements - and not the language requirements of Old English itself.

Poetic syntax, in addition to "dislocation', includes such other features as the use of multiple appositives, all with essentially the same meaning, or if you like, 'variations on a theme" which add little or nothing to the poem as far as content goes but do provide variation and which also permit meeting certain alliteration specifications. Although it is entirely possible that there may be a connotative difference between one variation and another, no denotative difference exists.

(18) hie þa to þam symle sittan eodon
wlance to wingedrince [appositive to a-line above] eallе his weagesiþas [appositive to subject]
bealde byrnwiggende [appositive to subject] Judith 15-17

[They then to the feast went to sit, the proud to the wine-drinking, all his companions-in-woe, bold mailed-warriors]

(19) Ne wolde þaet wuldres Dema [subject] geþafian, þrymmes Hyrde [appositive to subject] ac he him þaes þinges gestyrde, Dryhten [appositive to subject] dugeþa Waldend [appositive to subject] Judith 59-61

[The judge of glory would not permit that, the Herder of glory, but he restrained him from that thing, the Lord, the ruler of men].

Another form of poetic syntax is the frequent use of the weak adjective substantive noun phrase in the form 'demonstrative se, seo, þaet + weak adjective as noun as in

(20) a to þam AElmihtigan Judith 7
[ever to the Almighty],

the adjective substituting for the noun 'king, ruler, etc.' The omission of the head noun is caused by the lack of a noun meaning 'God' that begins with a vowel in this particular instance. However, in

(21) þa þaes rinces se rica [demonstrative + weak adjective] ongan cyning [noun head of subject noun phrase] costigan Genesis A 2846

[then the powerful king began to test the warrior]

although the appearance is that of the demonstrative + weak adjective/substantive with the noun cyning located in the next line in apposition to se rica, 'the powerful-one', the alliteration requirements force the appearance that it is a weak adjective acting as a noun substitute even though it actually is just a demonstrative + weak adjective separated from the head noun cyning. The separation of one part of a syntactic unit from the rest of the unit, e.g., the adjective or genitive separated from the head noun, occurring either before or after it and often separated from in by a line is not an unusual response to alliteration patterns:

(22) he let him þa of handon leofne fleogan
hafoc wiþ þaes holtes Battle of Maldon 7-8

[he let then the dear hawk fly from his hands against the woods]

(23) For þon wat se þe sceal his winedryhtnes
leofes larcwidum longe forþolian Wanderer 37-38

[Therefore, (he) knows, who shall forgo his dear friend-lord's advice]

In (22) Cassidy and Ringler (1971, 273) assert that the adjective leofne "seems attributive", seeming to suggest also that the separation of leofne from hafoc is probably due to the alliteration. This conclusion may also be influenced by the fact that the adjective precedes the head noun. In (23) they suggest that the adjective leofes is "being used appositionally, i.e., substantivally", and therefore not attributivally. This interpretation may well be due to the fact that the adjective follows its head noun and, therefore, is seen by them as being quite different from the adjective that precedes its head noun. The evidence found in this analysis suggests very strongly that both adjectives are attributive, their placement a matter of alliteration requirements and not semantic functions. Prepositions and auxiliary verbs also precede or follow the head word in much the same manner as adjectives and genitives. The long, non-periodic sentences are also a feature of poetic syntax and alliteration requirements:

(24) Gyf þu þat geraedest þe ricost eart
þaet þu þine leoda lysan wille,
syllan saemannum on hyra sylfra dom
feoh wiþ freode and niman friþ aet us
we willaþ mid þam sceattum us to scype gangan
on flot feran and eow friþes healdan Maldon 36-41

[If you decide that, who here are richest, that you will ransom thy people, give to the seamen, in their own judgment, goods with peace, and take peace with us, we will go to our ships with the goods, go on the sea, and hold peace with you]

The last feature of poetic syntax is that of figurative language: multiple terms all with the same essential meaning but beginning with different sounds. It is possible that there may have been slight connotative differences among them; but denotatively, all have the same meaning: garsecg, 'spear-man' (also 'Neptune'); swan-rad, 'swan road'; hron-rad, 'whale road'; ganotes baeþ, gannet's bath'; waetera geþring, 'the waters' commotion'; yþa gewealc, 'the waves' rolling'; hwaeles eþel, 'the whale's home'; among still others, all denoting the 'sea' or 'ocean'. These forms do not meet a language requirement but a poetic form requirement.

The most interesting finding of the analysis was that poetic requirements affect the word order of the b-line far more than that of the a-line in the ten poems analyzed. In the b-line the normal word order is that of the OV typology, the typology of Proto-Germanic, with only a few instances of VO word order. This suggests that the b-line word order reflects the order of the continental Germanic of the time the poetic form was invented, and that, as Lehmann states, "Germanic verse form was constructed out of the patterns of colloquial speech, out of the rhythms of prose" (1971, 65) with the poetic form well suited to the language of that time. The word order in the a-line seems to differ because of the changing nature of Old English. The analysis also reveals that the a-line word order seems to reflect the prose syntax of Old English more than the b-line does and the state of the language (OV vs. VO typological features) at the time of the poem's composition with the result that instances of each typology occur along with instances of a mixed OV/VO character in the same poem:

(25) begoten mid golde Dream of the Rood 7a
[begotten with gold]

containing the verb and instrument in VO order, vs.

(26) synnum fah Dream of the Rood 13b
[with sins stained]

having them in OV order. The same patterning is also found with adjectives and nouns:

(27) rofe rondwiggende Judith 20a
[brave shield-warriors] vs.

(28) weras winsade Judith 71a
[men winesodden]

with genitive constructions:

(29) byrnwigena brego Judith 39a
[the mailed-warriors' chief] vs.

(30) goldwine gumena Judith 22a
[the gold-friend of men]

and in mixed OV/VO order:

(30) þaet þu þas gesyhþe secge mannum Dream of the Rood 96
[that you these visions should say to men].

Although many accounts of poetic syntax imply that the various features of poetic syntax discussed above are the result of deliberate manipulation of the language by the poet in order to attain specific poetic effects, this study reveals no evidence to suggest this is the case. Poetic syntax is the result of a poet trying to meet the line alliteration requirements. The study further demonstrated that tyranny of poetic form or slavish adherence to poetic form at the expense of normal language usage occurred throughout the entire Old English period, but particularly so in the late Old English period when the language was changing quite rapidly. However, this poetic form tyranny was permitted by the language, itself tyrannical in its control of our thought processes by our linguistic patterns (Lehmann 1971, 16; Whorf, 1952, 25-45), most likely just because Old English was a transitional, changing language.

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FROM *curb niês* TO *cor nier*: THE LINGUISTIC METAMORPHOSES OF WILLIAM'S EPIC NOSE

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In the course of a dramatic victory over the Saracen giant, Corsolt, the epic hero, William of Orange, suffered the indignity of losing the tip of his nose. In a flash of wit, he turned this disfigurement into a sign of merit and said, in sum: "My nose has been shortened a bit, but my name will be lengthened on account of it. From now on, those who love me should call me William Short-nose." This explanation of the name *Guillelme al Cort Nes* appears in the *Couronnement de Louis*,[1] an Old French epic which was probably written between 1131 and 1150.[2]

It is doubtful, however, that William's unusual profile was originally the result of surgery abruptly inflicted by the Infidel. In the *Nota Emilianense*, a brief Latin plot summary that was added to a manuscript of Spanish origin in the third quarter of the eleventh century, William accompanies Charlemagne to Saragossa and is referred to as *Ghigelmo Alcorbitunas*[3] 'William with the Curved Nose'; and he is *Guillelmus Curbinasus* when he appears as a witness, along with other epic heroes, in a document purporting to show that Charlemagne gave certain privileges to the Abbey of Saint-Yrieix-de-la-Perche in 794. This false diploma was actually drafted about 1090.[4] In addition, the epithet *al curb niês*, also meaning 'with the curved nose', occurs frequently in the *Chanson de Guillaume*.[5] This Old French epic acquired its present form about 1150;[6] but it is composed of two distinct parts, the first of which (ll. 1-1980) is distinctly older than the second (ll. 1981-3554) and was probably written between 1120 and 1125.[7] In both parts of the *Chanson*, William's name is regularly lengthened by the *curb niês*. However, the tendency to drop the final consonant of the unaccented adjective[8] is revealed in line 55 by *al cur niês*.

This is the poet's first reference to William's peculiar nose; and the ambiguity of the descriptive formula apparently led the early thirteenth-century scribe[9] to reinterpret the accusative form *cur* as standing for *curt* instead of *curb* when he reached line 85, where we find the epithet *al curt niês*. Thereafter, the scribe limits himself to *curb*, the adjective that must have appeared repeatedly in the text before him.[10] By the middle of the twelfth century, the reinterpretation of *cur* as *curt* had already given rise to the flattering biographical explanation provided by the *Couronnement*, one of the oldest *chansons de geste* in the William cycle; and the popularity of this explanation encouraged and perpetuated the error to such an extent that *curb* is totally absent from the references to William's nose in the other twenty-four epics of the cycle. By eliminating a single consonant, syntactical phonetics

reduced the dimensions of William's nose and thus changed the course of an epic tradition.

The phonetic evolution of the original epithet is well known to William cycle specialists, but scholars have paid almost no attention to two other related epithets that need to be explained. When William plays a brief rôle in the *Roman d'Arles*, an Occitan epic which dates from the end of the thirteenth century or the first half of the fourteenth,[11] he is called *Guilhenmes* or *Guilhermes al Cornier*; and present-day residents of Orange still debate the relative merits of the two modern local versions of the name: *Guillaume au Court Nez* and *Guillaume au Cornet* 'William with the Little Horn'. In my view, Camille Chabaneau, the editor of the *Roman d'Arles*, was in error when he treated *cornier* as a single word and also as a borrowing from French.[12] In Old French, *cornier* may mean 'cornel tree', as in Old Occitan, or 'corner'; but, since William has no known connection with either of these, *cornier* makes little sense in its epic context unless one divides it into two perfectly normal Old Occitan words, *cor*, meaning 'horn'[13] or 'heart', and *nier*, meaning 'black'.

Approximately the last two thirds of the *Roman d'Arles* have been partially turned into prose and transcribed as such in the manuscript, but the original verses have remained sufficiently intact to make it possible to comment meaningfully on the metrical function of the epithet *al cor nier*. The surviving text is divided into three sections, the last of which deals with the various conflicts that lead to the definitive expulsion of the Saracens from Arles. William, who displays his valor during the fourth of the five sieges of Arles, is presented as *Guilhenmes* or *Guilhermes al Cor Nier* in the first hemistich of four different verses (ll. 963, 999, 1048-49, and 1055 of the prose in the modern edition) and in the second hemistich of only one verse (l. 1009). *Cor nier*, of course, occurs at the end of this verse, which is part of a ten-line laisse (epic stanza) in which all of the assonance-words except *Garin* and *nier* end in *-ir*. I speak of assonance with some hesitation here, since the poet's frequent use of both assonance and rhyme makes it difficult to determine what is intended in this laisse. The writer obviously prefers rhyme to assonance but allows himself a fair number of assonances. One thing is abundantly clear, however, namely, that *cor nier* is not simply a deformation of *cur niês* or *cornet* for the sake of the assonance. If anything, *cor nier* [kǫr njęr] is being pronounced [kǫr nięr] or [kǫr nir] to reinforce the rhymes in *-ir*; and the spelling *cor nir*, which the modern editor changed to *cor ni[e]r* in the first hemistich of line 999, may represent either of these two pronunciations, given the inadequacy of the orthographic system. Elsewhere in the epic, the ending *-ier* either rhymes with itself (l. 633) or assonates with the tonic vowel [i] followed by *r* or *tz* (ll. 672-73, 739).

I would not place this much emphasis on *al cor nier* if I had not discovered, at the Biblioteca Marciana in Venice, an example of this epithet in the Franco-Italian manuscript of *Aliscans*. In this Old French epic, William and his army are defeated by the Saracens

on the vast plain called Aliscans, that stretches from Arles to the Mediterranean. William returns alone to his castle in Orange and, after a very brief rest, makes his way to Laon, where he obtains military reinforcements from Charlemagne's son, King Louis. Accompanied by these troops and by those supplied by his six brothers, William rides from Orange to the great battlefield below Arles. This time the Christian army puts the Saracens to rout and celebrates the victory with great feasting in Orange, or, rather, in Arles; for, according to the distorted geography of the epic, Orange is exactly where Arles ought to be. In *Aliscans*, as I have shown elsewhere, an unavowed siege of Arles has replaced the lost siege story that should follow the events recounted in the *Prise d'Orange*,[14] the epic poem that describes the ruses by which William took Orange from the Saracen king, Thibaut, and married the latter's wife as well. The fourth and fifth sieges of Arles in the Occitan epic, in fact, provide us with a summary of an Arlesian version of the Aliscans story with the Saracens inside the city and the Christians outside; whereas the reverse is true in the disguised siege of Orange.

Since *al cor nier* seems to have close ties with Arles and local traditions in the lower Rhône valley, the appearance of this epithet in the Franco-Italian manuscript of *Aliscans* deserves careful scrutiny. In the judgment of Günter Holtus, whose edition of this manuscript will soon be published, the Franco-Italian copy of *Aliscans* was made in the thirteenth century.[15] As far as scholars have been able to determine, the poem itself was probably written between 1185 and 1200.[16] However, an older version of the story, often referred to as the *Chanson de Rainouart*, can be posited as the common source of *Aliscans* and Part II of the *Chanson de Guillaume*;[17] and Madeleine Tyssens has demonstrated that the Venice text is the best of the twelve *Aliscans* manuscripts in terms of closeness to the lost *Chanson de Rainouart*.[18] Consequently, any unusual element in the Marciana manuscript may belong to an earlier stage in the evolution of the text.

The epithet that concerns us occurs in the form *au cor nier* at the end of the first line of an aphoristic comment which, to facilitate comparisons with other manuscripts, I shall quote in full: "Encui sevra Giellmes au Cor Nier / Cum paubres hom puit au riche playder."[19] The hero is about to have difficulty obtaining military aid from King Louis; and the poet tells us that, "before the day is over, William Blackhorn will know how a poor man can plead with a rich one." This passage corresponds to lines 2452-53 in the modern edition of *Aliscans*,[20] where the wording is as follows: "Anqui savra Guillames au vis fier, / Cum povres hom puet au riche plaidier." Inasmuch as the Venice variant is the only one listed for the description of William, it would appear that *au cor nier* was incomprehensible to French poets and was, therefore, replaced by the cliché *au vis fier* 'with the proud countenance'. According to the explanatory hypothesis proposed by Professor Tyssens, MS *D*,[21] the two manuscripts of group *B*,[22] and, to a lesser degree, MS *F*[23] are more closely related to MS *M*, the Franco-Italian copy, than the other

Aliscans manuscripts but, unlike *M*, show no renewed contact with the *Chanson de Rainouart*.[24] Since the variants printed in this part of the modern edition are incomplete and untrustworthy and the readings of *D* are not even included among these variants,[25] I examined *D* and the Paris manuscript of the *B* group and found that, here too, *vis fier* had been substituted for *cor nier*.[26] Furthermore, in both of these manuscripts as in the modern edition, the *paubres hom* of the Marciana text has become a *povres hom*, which should not surprise us, given the fact that *paubres* belongs to Occitan speech just as much as William's *cor nier*.

From the stylistic point of view, the *Aliscans*-poet is using the gnomic verses under discussion to reinforce, by repetition, what he has said in slightly different terms in the previous laisse. The modern edition presents the following version of the earlier lines:

> Ancui savra Guillames au cort nes,
> Com povres hom est dou riche apelés,
> S'il est avant ou arire boutés. (2443-45).

"Before the day is over," warns the author, "William Shortnose will know how a poor man is addressed by the rich man, whether he is pushed forward or back." These verses appear in the Venice text (fol. 34v°, ll. 16-18) with the Occitan words *paubres* and *dau* in place of *povres* and *dou*.

In addition, a version of this passage can also be found in Part II of the *Chanson de Guillaume*. As Professor Tyssens discovered in the course of her work on the manuscript tradition, this portion of the *Guillaume*, despite the many corrupt readings in the text, brings us even closer to the lost *Chanson de Rainouart* than does the Venice manuscript.[27] Since the verses in question are not in the more heavily revised transitional section that extends from line 1981 to approximately line 2335,[28] there is every likelihood that they contain elements of an earlier poetic tradition. These three lines are worded as follows:

> Ancui saverad Willame al curb nes
> Cum povres hon pot vers riche parler,
> E queles denrees l'um fait de cunsiler! (2493-95)

This time we are informed that "before the day is over, William Curvednose will know how a poor man can speak to a rich man and what provisions one accumulates by giving advice and aid!"[29] This ironic commentary on King Louis' ingratitude is not, however, repeated elsewhere; and the use of the same assonance vowel in the next laisse strongly suggests that the reviser or the scribe has skipped a laisse and, quite possibly, one assonating in [jẹ] and putting to good use the epithet *al cor nier*.

How is the *cor nier* connected with the *cur niês*, whether it be short or curved? Guillaume au Cornet, whose curved hunting horn appears on the escutcheon of the city of Orange, provides us with what seems to be the missing link. The *cornet* is first attested in 1184 on the seal of Guillaume de Baux, prince of Orange.[30]

Since the bell of the horn is turned upward, this heraldic device could very well represent a concave nose deprived of its tip and somewhat bulbous at the end, in other words, terminating in the famous lump by which William's wife Guiborc recognizes him when he returns from battle. Scholars have generally assumed that William had an aquiline nose, but the direction of the curve is not specified in the epithet. The heraldic horn of William is normally blue, but it may also be black.[31] Consequently, it is entirely possible that the *cor nier* reflects the tradition of using sable on the escutcheon.

The ambiguity of *cor nier* must, however, be taken into consideration. As I mentioned earlier, it can refer to a black heart as well as a black horn; and Joseph Bastet, in the history of Orange that he published in 1856, tells of discovering in Châteauneuf-de-Gadagne, a village near Avignon, a vague legend according to which the town was conquered from the Saracens by a certain Guillaume au Coeur Noir.[32] Bastet does not tell us whether he heard the story in French or in Provençal, but the noun *cor* was just as ambiguous in nineteenth-century Provençal[33] as in the language of the troubadours. William's *coeur noir* is probably based on a misunderstanding of *cor nier*; but, since a black heart, in medieval French and Occitan texts, is a sign of melancholy rather than malevolence and does befit William's state of mind in many of the situations he encounters, the ambiguity of the epithet may be intentional. William Blackhorn and William Sadheart are not mutually exclusive.

The color selected for the horn, or heart, may be derived from a misunderstanding of *niés* as the nominative case of *nier*. The reduction of final *rs* to *s* was widespread in medieval Occitan and is attested as early as the twelfth century.[34] In the *Roman d'Arles* itself, one finds such forms as: *hodos* for *hodors* (l. 175), *melhos* for *melhors* (ll. 517, 586, 598), *senhos* for *senhors* (ll. 337, 375, 517, et passim), *cos* for *cors* (l. 664), *mus* for *murs* (ll. 761, 765, 767, et passim), *deniés*[35] for *deniers* (ll. 420, 447, 514), *cavaliés* for *cavaliers* (ll. 242, 373, 383, 385, 621), and also *escudiés* for *escudiers* (ll. 322, 325, 373, 390), *Oleviés* for *Oleviers* (l. 661), and *piés* for the artificial literary form *piers* corresponding to the French noun *pers*, often used to designate the Twelve Peers of Charlemagne (ll. 661, 742, 805). In view of the fact that misuse of case endings for the sake of the rhyme is fairly frequent in medieval French and Occitan epics, a resident of southern France might have felt inclined to interpret *al cur niés* as a poetic use of *al cor niers* for *al cor nier*, especially since *curb*, *cur*, and *curt* are Anglo-Norman spellings for the more usual Old French and Old Occitan forms *corb*, *cor*, and *cort* and *niés* is itself an artificial literary form of *nes*, the regular Old French word for 'nose'. A French *cur niés* [kur njęs] transcribed as *cor niés* in Occitan and pronounced [kǫr njęs] could easily have been transformed into a *cor nier* by a very logical act of reinterpretation.

Of course, heraldic symbolism would also have encouraged the substitution of *cor nier* for *cor niés*. Furthermore, *cor nier* [kǫr njęr] and *cor niés* [kǫr njęs] were probably used as punning refer-

ences to William's *cor niês* [kǫr njęs]; and the same may also be true of the word *cornet*, which would have been pronounced [kǫrnę́t] or [kurnę́t] in twelfth-century Occitan.[36] *Nas*, the regular Occitan word for 'nose', was not well suited to such puns.

Incorrect in both French and Occitan, *niês* contains the parasitic yod that frequently appears before tonic *e* in the assonance- and rhyme-words of epics written in Occitan with a noticeable admixture of French, a literary blend that can appropriately be called Franco-Occitan. Examples of the substitution of a pseudo-French *ié* for Occitan *a* derived from Latin free tonic *a* not preceded by a palatal abound in the assonances of *Roland à Saragosse*[37] and in the rhymes of *Daurel et Beton*,[38] *Ronsasvals*,[39] and the Occitan version of *Fierabras*.[40] Furthermore, in *Roland à Saragosse*, the Gallicisms produced by this false analogy between French and Occitan are used fairly often in non-assonance position,[41] which suggests that words like *niês* could be regarded as normal when they appeared in a literary context.[42]

It is possible, of course, to assume that the *ie* of *niês* is a variant spelling for *e*, since Mildred Pope has shown that the digraphs *ai*, *ei*, and *ie* could all represent the letter *e* in later Anglo-Norman.[43] To all appearances, the Anglo-Norman scribe who copied the one surviving manuscript of the *Guillaume* does replace *e* with *ie* a total of fifty times; and this *ie* has been interpreted as purely orthographic in the two most authoritative scholarly editions of the *Guillaume*.[44] However, thirty-three of these replacements occur in some form of the traditional epithet used to describe William's nose; and the *niês* version of the epithet, though it normally appears at the end of the line, can also be inserted at the beginning of the second hemistich (ll. 85, 299). Consequently, there is every likelihood that, in this particular case, the scribe is preserving a form which he regards as a fixed part of a proper name rather than indulging in the orthographic inconsistency that was common among Anglo-Norman copyists. Furthermore, *niês* clearly predominates over *nes* and *neis* in the extension to William's name. Of the forty examples of the epithet, only seven contain either *nes* or *neis*.[45] *Niês* in this context is almost certainly the poet's choice rather than the scribe's and, therefore, strongly suggests that the poem has close ties with its Occitan roots. It is true that, when used as an assonance-word, *niês* [njęs] appears only in laisses that assonate in long close *e* derived from Latin free tonic *a*; but this does not necessarily indicate that *ie* represents *e*, since the continental French poet[46] probably retained a part of the assonance system in his source while changing many a Franco-Occitan [jęˌ] to [ẽ]. Inasmuch as the diphthong [jęˌ] regularly assonates with [ęˌ] in *Roland à Saragosse*, it is not surprising that the poet occasionally allows French [jęˌ] to assonate with [ẽ].

Lest I be reproached for not mentioning the sole reference to William's nose in an Occitan epic, I shall deal immediately with

the oft-quoted passage from the *Chanson de la croisade albigeoise*, a passage that is found in the anonymous continuation that was begun in 1228.[47] Using William's example to encourage the men who are besieged in Beaucaire by Raymond de Toulouse, Régnier de Chauderon says to them: "Senhors, remembre vos Guilhelmet al cort nes, / Co al seti d'Aurenca suffri tans desturbiers" (laisse 159, ll. 49-50). This exhortation can be translated as follows: "Lords, remember Billy Shortnose, how he endured such great trials at the siege of Orange." One could be led to suppose that *cort nes* was inserted here because William was so popular in northern France that the first epics written about him were composed in French and that the epithet attached to his name by northern poets traveled south and was adopted by Occitan writers at a later date. However, from the prosodic standpoint, *cort nes* does not belong in the 78-line laisse in which it occurs. This laisse rhymes in *-iers*, although the scribe's spelling does not always indicate the yod that precedes *-ers*. *Nes* should obviously be *niers*, and the final *t* of *cort* eliminated. In this line, William is actually *al cor niers*, with an ungrammatical *s* for the sake of the rhyme, a practice that also manifests itself elsewhere in the same laisse. A reviser or scribe must have modified the epithet under the influence of the French form *cort nes*, or the Franco-Occitan form *cort niés*.[48]

One example of *Guilhem al Cornas* has come down to us, but it is found in a late fourteenth-century Occitan prose translation of the *Chanson de la croisade albigeoise*[49] and in the passage that corresponds to the verses under discussion.[50] In all probability, the translator was simply Occitanizing the misleading epithet that has been preserved in the sole surviving manuscript of the poem. This manuscript was copied about 1275,[51] in other words, about fifty years after the anonymous continuation was begun.

The foregoing analysis raises an important question. If *cor nier* can become *cor niers* and *cor niers* can become *cor niés*, what is to prevent *cor niés* from being reinterpreted as *cort* or *corb niés*? Should I rewrite the title of this paper so as to reverse the evolutionary process? To judge by the chronology of the available evidence, the answer is no. William's physical peculiarity and the terms used to describe it clearly antedate the first appearance of the horn either heraldically or linguistically, and they also precede the first examples of *niés* and of the loss of *r* before final *s*. It is also logical to suppose that the epithet *Alcorbitunas* in the *Nota Emilianense* is derived fnom an Occitan epic tradition.[52] *Al corb nas*, the form that one would expect to find in everyday Occitan, could easily become *al corb niés* in a Franco-Occitan *chanson de geste*; whereas there is no evidence that French writers were in the habit of substituting a pseudo-French *ié* for *e* in words like *nes*. An unattested **al corb nas* appears to be at the root of the linguistic metamorphoses that lead from *al curb niés* in the *Chanson de Guillaume* to *al cor nier* in the *Roman d'Arles* and other texts. The complete evolution in Occitan can be diagrammed as follows: **al corb nas* > *al corb niés* > *al cor niés* > *al cor niers* > *al cor nier*. Moreover, *cor* could be reinterpreted as *cort* in Occitan just as easily as in French.

If the hypothetical sequence I have set forth is accurate, there is every likelihood that the principal epic traditions concerning William of Orange arose in southern France and were later adapted for the use of northern readers. Greater precision is not possible at present; but, whatever conclusions one chooses to draw, it should be clear from the material just presented that an awareness of the purely literary nature of certain lexical items and some acquaintance with heraldry, sigillography, vernacular prosody, and the textual history of relevant works of literature can be extremely useful to the historical linguist.

Notes

1. Ed. Ernest Langlois, 2nd ed., Les Classiques Français du Moyen Age, 22 (Paris: Champion, 1925), ll. 1159-64.

2. Jean Frappier, *Les Chansons de geste du cycle de Guillaume d'Orange*, 2nd ed. (Paris: Société d'Edition d'Enseignement Supérieur, 1967), II, 57-59.

3. Ramón Menéndez Pidal, *La Chanson de Roland et la tradition épique des Francs*, 2nd ed., trans. Irénée-Marcel Cluzel (Paris: Picard, 1960), pp. 384-87, 390.

4. Joseph Bédier, *Les Légendes épiques*, 3rd ed., IV (Paris: Champion, 1929), 422-24; and Menéndez Pidal, *La Chanson de Roland*, pp. 402-403.

5. Ed. Duncan McMillan, Société des Anciens Textes Français, 2 vols. (Paris: Picard, 1949-50), ll. 116, 130, 179, 299, 829, 906, 945, 954, 1084, 1230, 1366, 1506, 1681, 2217, 2226, 2239, 2244, 2249, 2268, 2281, 2640, 2693, 2861, 2876, 2944, 2984, 3143, 3278, 3283, 3377. All references to the *Guillaume* will be to this edition.

6. Jeanne Wathelet-Willem, *Recherches sur la Chanson de Guillaume: Etudes accompagnées d'une édition*, Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, 210 (Paris: "Les Belles Lettres," 1975), I, 651-54.

7. Wathelet-Willem, *Recherches*, I, 652-53, 695-96.

8. Cf. Frappier, *Les Chansons de geste*, I, 90.

9. Wathelet-Willem, *Recherches*, I, 46-50.

10. Cf. Menéndez Pidal, *La Chanson de Roland*, p. 420.

11. Mario Roques, "Le *Roman d'Arles*," *Histoire Littéraire de la France*, 38 (1949), 639.

12. "Le *Roman d'Arles*," *Revue des Langues Romanes*, 32 (1888), 479. All line references will be to this edition.

13. *Corn* is the usual medieval spelling when this word means 'horn'; but *cor* is also attested. See François J. Raynouard, *Lexique roman ou dictionnaire de la langue des troubadours*, II (Paris: Silvestre, 1836), s.v. *corn*. Additional examples of *cor* can be found in the *Roman d'Arles*, l. 878, and in *Roland à Saragosse*, ed. Mario Roques, Les Classiques Français du Moyen Age, 83 (Paris: Champion, 1956), l. 253. Moreover, it is unlikely that speakers of Old Occitan made a special effort to articulate a double *n* when pronouncing *corn* followed by *nier*.

14. On December 28, 1982, at the meeting of the Modern Lan-

guage Association of America in Los Angeles, I gave a detailed explanation of this geographic error in a paper entitled "Geography and Epic Tradition in *Aliscans*."

15. "Zur Edition der franko-italienischen Fassung von *Aliscans*," *Zeitschrift für romanische Philologie*, 94 (1978), 15.

16. Frappier, *Les Chansons de Geste*, I, 240-41.

17. Frappier, *Les Chansons de Geste*, I, 145-48.

18. *La Geste de Guillaume d'Orange dans les manuscrits cycliques*, Publications de la Faculté de Philosophie et Lettres de l'Université de Liège, 178 (Paris: "Les Belles Lettres," 1967), pp. 249, 263-64.

19. Venice, Biblioteca Marciana, Fr. VIII (= 252), fol. 35r°, l. 24.

20. Ed. Erich Wienbeck, Wilhelm Hartnacke, and Paul Rasch (Halle: Niemeyer, 1903).

21. Paris, Bibliothèque Nationale, Fonds Français 1448.

22. London, British Museum, Royal 20 D XI; and Paris, Bibliothèque Nationale, Fonds Français 24369.

23. Paris, Bibliothèque Nationale, Fonds Français 2494.

24. *La Geste de Guillaume d'Orange*, pp. 249, 263-64.

25. Tyssens, *La Geste de Guillaume d'Orange*, pp. 250-51.

26. Paris, Bibliothèque Nationale, Fonds Français 1448, fol. 231*c*, l. 32; and Fonds Français 24369, fol. 214*c*, l. 30.

27. *La Geste de Guillaume d'Orange*, p. 249.

28. Wathelet-Willem, *Recherches*, I, 698-99.

29. Line 2495 makes sense as it stands, provided that *cunsiler* refers to all the unrewarded help that William has given King Louis. However, the correction *consirer*, adopted by Professor Wathelet-Willem (*Recherches*, I, 135-37), improves the assonance and at the same time makes the line apply to the typical situation of a poor man in the position of suppliant before a powerful lord. If William is denied aid, he will certainly learn "what provisions one gets from privation." For additional details concerning this and related problems, see Madeleine Tyssens, "Deux passages suspects dans la *Chanson de Guillaume*," in *Hommage au Professeur Maurice Delbouille*, *Marche Romane*, 23, Numéro special (1973), pp. 107-121.

30. Alice M. Colby-Hall, "In Search of the Lost Epics of the Lower Rhône Valley," *Olifant*, 8 (1981), 342-44.

31. [François] de La Chesnaye-Desbois and Badier, *Dictionnaire de la noblesse*, 3rd ed., XV (Paris, 1869; rpt. Nendeln [Liechtenstein]: Kraus Reprint, 1969), s.v. *Orange*, col. 187; Bernard de Vevey, ed., *Le Livre des drapeaux de Fribourg (Fahnenbuch) de Pierre Crolot, 1648* (Zürich: Orell Füssli, 1943), p. 34, cited in Florens Deuchler, *Die Burgunderbeute: Inventar der Beutestücke aus den Schlachten von Grandson, Murton und Nancy, 1476/1477* (Bern: Stämpfli, 1963), p. 204, No. 92, and p. 276, No. 175; and Orange, France, Bibliothèque Municipale, letter from E. Germain, city archivist, to J. H. K. de Roo van Alderwerelt, May 4, 1971.

32. *Histoire de la ville et de la principauté d'Orange* (Orange: Raphel, 1856; rpt. Marseille: Laffitte, 1977), p. 24.

33. See Frédéric Mistral, *Lou Tresor dóu Felibrige* (Aix-en-Provence: Remondet-Aubin, 1879-87), I, s.v. *cor* 'heart' and *cor* 'horn'.

34. Charles Hall Grandgent, *An Outline of the Phonology and Morphology of Old Provençal*, rev. ed. (Boston: D. C. Heath, 1905), p. 53.

35. For the sake of clarity, I have added an acute accent to the *e* in *-ies* when the latter is derived from *-iers*. Chabaneau uses no diacritical mark to indicate that this ending is monosyllabic.

36. On the pronunciation of pretonic *o* in Old Occitan, see Oskar Schultz-Gora, *Altprovenzalisches Elementarbuch*, 5th ed., Sammlung romanischer Elementar- und Handbücher, 1. Reihe: Grammatiken, 3 (Heidelberg: Carl Winter, 1936), §§ 47, 50.

37. For edition, see above, n. 13.

38. For editions, see below, n. 42.

39. Mario Roques, ed., "*Ronsasvals*, poème épique provençal," *Romania*, 58 (1932), 1-28, 161-89; 66 (1941), 433-80.

40. Immanuel Bekker, ed., "Der Roman von Fierabras, Provenzalisch," *Königliche Akademie der Wissenschaften zu Berlin: Abhandlungen, Historisch-philologische Klasse*, 1826, pp. 129-278.

41. Ed. Mario Roques, ll. 70, 165, 241, 242, 357, 362, 394, 549, 570, 694, 928, 962, 981, 1015, 1081, 1187, 1191, 1198, 1239, 1294, 1309, 1336, 1364, 1397. This epic contains only 1410 lines.

42. For further discussion of the *a* > *ié* question, see Paul Meyer, ed., *Daurel et Beton*, Société des Anciens Textes Français (Paris: Firmin Didot, 1880), pp. xxxvii-xlvii; Mario Roques, ed., *Roland à Saragosse*, pp. xxiii-xxiv; Hans-Erich Keller, "*Roland à Saragosse*: Rencontre de deux cultures," in *Mélanges offerts à Rita Lejeune* (Gembloux: Duculot, 1969), I, 141-46; and Arthur S. Kimmel, ed., *A Critical Edition of "Daurel et Beton" with Notes and Prolegomena*, University of North Carolina Studies in the Romance Languages and Literatures, 108 (Chapel Hill: University of North Carolina Press, 1971), pp. 21-23.

43. Mildred K. Pope, *From Latin to Modern French with Especial Consideration of Anglo-Norman*, 2nd ed. (Manchester [England]: Manchester University Press, 1952), § 1223.

44. McMillan, *La Chanson de Guillaume*, pp. 86-88; Wathelet-Willem, *Recherches*, I, 189-90.

45. *Curb niés*, preceded by *al* (see note 5) or *od le* (l. 1538) occurs thirty-one times as compared with two examples of *al curb neis* (ll. 1511, 3034), four examples of *al curb nes* (ll. 825, 2493, 2983, 3382) and one example of *od le curb nes* (l. 2311). *Al cur niés* and *al curt niés* each appear once (ll. 55, 85). In addition, there are three non-epithet occurrences of *niés* (ll. 866, 1009, 3118) and only one of *nes* (l. 2310). Thus in the text as a whole, the Franco-Occitan form of *nes* appears thirty-six times; whereas the French forms are used only eight times. The remaining fourteen occurrences of *ie* in place of *e* are distributed as follows: *niefs* 'boats', ll. 151, 1105, 1343, 2086, 3041; *niés* 'boats', ll. 1632, 2943, 3011; *tiel*, ll. 2895, 3361; *itiel*, l. 2959; *liez* 'sides', l. 1865; *siet*, l. 2600; *triefs*, l. 157.

46. Wathelet-Willem, *Recherches*, I, 655.

47. Eugène Martin-Chabot, ed., *La Chanson de la croisade albigeoise*, Vol. II: *Le Poème de l'auteur anonyme (1re partie)*,

Les Classiques de l'Histoire de France au Moyen Age, 24 (Paris: "Les Belles Lettres," 1957), p. xiv. All line references will be to this volume of the three-volume edition.

48. *Niés* can justifiably be called the *koiné* form provided that one keeps in mind that it must have figured in more than one Franco-Occitan *koiné*. The various blends of French and Occitan have yet to be defined in precise terms.

49. Claude Devic and Joseph Vaissete, *Histoire générale de Languedoc*, VIII, 2nd ed., rev. Auguste Molinier (Toulouse: Privat, 1879), col. 3.

50. Claude Devic and Joseph Vaissete, *Histoire générale de Languedoc*, VIII, col. 123.

51. Eugène Martin-Chabot, ed., *La Chanson de la croisade albigeoise*, Vol. I: *La Chanson de Guillaume de Tudèle*, Les Classiques de l'Histoire de France au Moyen Age, 13 (Paris: Champion, 1931), p. xxi.

52. Cf. Menéndez Pidal, *La Chanson de Roland*, p. 421.

THE NEW GENETIC RELATIONSHIP AND THE PALEOLINGUISTICS OF THE CENTRAL CALIFORNIA INDIAN CEREMONIAL HOUSES

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Among the California Indians the sweathouse was a social institution.(1) It was used for physical, mental, and spiritual purification. It was the clubhouse for men, where ancient lore was transmitted; it was the place where boys were initiated into the secret society; and it was the place for performing the dances of the great ritual cycle. In its intense heat, or in its darkness, the shaman went into a trance and called upon the spirits.

The purpose of this paper is to investigate the origin of the California Indian sweathouses.

It is well established that the Indians came from Asia and we know that successive waves of immigrants, (especially to the Pacific Northwest), brought with them cultural traits which developed in later periods in Eurasia. Now that the comparative linguistic evidence also clearly speaks for a close genetic relationship between the California Penutian languages and the Ob-Ugrian languages, it is fitting that we investigate the paleolinguistic evidence for this important sociocultural phenomenon.

During the course of this short paper we will make reference only to a few cultural elements associated with the sweathouse. Since a relatively complete study would include several hundred "words", we must be satisfied with the treatment of only a few. Only the basic words connected with the sweathouse and sweating are treated. We have to omit the treatment of words referring to building materials and building methods, as well as the words designating the parts of the structure, the inside furnishings, the all important allocation of places and the titles associated with them, and the extensive ritual context associated with the house. We also omit the great number of place names which indicate the wide distribution and locations of sweathouses.

For understanding the origin of the Californian

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(1) I would like to express my grateful appreciation to my colleague Professor Gerald Marley, for his generous help and suggestions.

sweathouse we have to go to Asia; specifically to Northwest Siberia.

According to the testimony of Chernetsov (1974:60) and Okladnikov (1964:43) the archeological evidence in Siberia indicates that the ancient Ob-Ugrians -- namely the Voguls (Vg) and the Ostyaks (Os) -- lived in semi-subterranean houses. Some of these "dugouts" (or pits) date as far back as 2000 B. C. The Voguls and the Ostyaks still lived in such semisubterranean houses in the 19th century.

The entrance was through the smokehole located in the middle of the roof. Ancient legends still speak of the smokehole as the entrance and the lexical entries in Karjalainen and Toivonen (1948:309) clearly confirm such a practice among the Ostyaks.

The Central California Indians -- the speakers of the Wintuan, Maiduan, Yokutsan, Miwokan and the Costanoan languages(2) -- lived in similar semisubterranean houses. (McKern 1923). Their descendents still occupy the Central Valleys from Mt. Shasta to Bakersfield and from the San Francisco Bay to the crest of the Sierra Nevada. Archeologists have identified numerous sites in this area indicating the widespread use of these houses by the ancestors of the present Indians.

The semisubterranean sweathouses were primarily used for sweating by direct exposure to a fire. (These sweathouses should be distinguished from the smaller "water-vapor sweathouses".) They were essentially identical in their structure to the living quarters. Both were dug to a depth which placed ground level at shoulder height.

The Asiatic origin of the semisubterranean structures are generally recognized and we can trace their prototypes to the Bering Strait and beyond. According to Driver (1975:132), "The direct fire sweathouses of California are surprisingly similar" to the direct fire sweathouses of Alaska. He further states that, "like the dwellings...all of these men's houses seem to have stemmed from a common ancestral house of round ground plan in northern Asia." (Driver 1975:132) The Chukchi,

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(2) The most important abbreviations of the languages are as follows: Wintuan (Wi), Wintu (W), Nomlaki (No), Patwin (Pa), River Patwin (Par), Hill Patwin (Pah); Maiduan (Ma), Maidu (Md), Nisenan (Ni), Konkow (Ko); Yokutsan (Yo), Yawelmani (Yw), Yawdanchi (Yd), Chukchansi (Ch); Miwokan (Mi), Bodega Miwok (Mib), Marin Miwok (Mim), Lake Miwok (Mil), Plain Miwok (Mip), Northern Sierra Miwok (Mins), Central Sierra Miwok (Mics), Southern Sierra Miwok (Miss); Costanoan (Co), Mutsun (Mu), Rumsen (Ru).

occupying the Siberian side of the Bering Strait, lived in such semisubterranean dwellings up to the last century. (Antropova and Kuznetsova 1964:816)

The paleolinguistic evidence indicates that the sweathouses used by the Ob-Ugrians and the California Indians are not only nearly identical in construction, the words referring to them and to their parts, are also very similar. This again reinforces other findings which clearly indicate a close cross-continental link between these two cultures and languages.

The closeness of the linguistic relationship between California Penutian and Ob-Ugrian allows us to treat the cognate sets of both linguistic groups similarly in relation to Proto Finno-Ugrian and Proto Uralic. In other words, the rules which apply to the Ob-Ugrian languages generally apply to the California Penutian languages as well. This principle is demonstrated by Sadovszky (1981 and 1983). In this paper we will cite illustrative examples for some of these rules.

The Vogul kwel 'house' and the Wintuan kewel 'house'

These words and their derivatives are the most common designations for 'house' and 'sweathouse' in Vogul and in Wintuan. They are also used in their respective cultures for the "menstrual house", which is a smaller structure reserved for the woman during her menses and during childbirth. The menstrual house also serves as a house for purification by steam. In Wintuan Nomlaki and Wintuan Patwin the words kewel, kel, often designate a settlement, most likely a place where a big ceremonial house, or a sweathouse, was the center of cultural life.

The comparative sets are as follows:

Vogul		Wintuan		
kwel	'house'	WiW	qewel	'house'
kwal	'sweathouse'(3)	WiPa	kewél	'house'
kel	'house'	WiNo	kel	'house'
			el-kel	'sweathouse'
kol	'house'	WiPa	kula	'house'
kol, mań-	'menstrual house' "little house"	WiPa	qula	'menstrual house'

(3) Schlőzer (1771:311, items 106, 107).

The Wintuan ɬut 'roundhouse, sweathouse'

The second most important word connected with the sweathouse among the Wintuans is the word ɬut. It designates the big semisubterranean ceremonial house of Central California. While this house was also used for sweating, sometimes a somewhat smaller house of the same type was specifically constructed to serve as a sweathouse. The ɬut was the exclusive property of the chief, the place where he "called the dances." When the chief died he was buried in the ɬut, after which it was burned down. The fact that the ɬut was an excavated pit and the fact that it was used as a gravesite for the chief, justifies the comparison to the Ostyak form ɬot 'ditch, hole, grave, to bury, etc.* As we will see below, the Maiduan word for 'sweathouse' namely k̓um went through a similar semantic development.

The comparative sets are as follows:

Ostyak	Wintu
S ɬot 'pit, hole, grave' N ɬot 'pit, hole' -lot, ol- 'bed, sleeping place' S ɬot- 'to dig, to bury' lot 'to bury in an ash-pit in order to bake bread' "in der Aschengrube backen (Brot)" (KT) 493-494.	ɬut ~ ɬu't 'semisubterranean big dancehouse, sweathouse, earthlodge (room for fifty people)' Maiduan lŷt 'to bake by burying in the ashes'

A similar semantic development (i. e. "to bake in an earth oven") occurred also in the case of Maiduan k̓um, as discussed below.

The correspondence of the Ostyak ɬ- (or l-) to the Wintu ɬ- is regular, as is shown in the following examples:

Ostyak	Wintu
S ɬutatta- 'to swing back and forth, (also of foot); to wag the tail (dog)'	ɬutu'ta 'to wobble, to shake like jelly' ɬutu'tit 'that which wobbles; a legendary creature, which wobbled when walking'

Ostyak	Wintu
N lutij- 'to sink in the mud, as a reindeer or horse'	ɬu'tel 'to be stuck'

Exact correspondences with initial barred ɬ- occur also in other California Penutian languages. For Example:

Ostyak	Lake Miwok
S ɬant- 'to get blisters from rubbing' "durch Reiben Blasen bekommen" (KT)485.	ɬanti 'to blister from rubbing'

The Maiduan ǩum 'roundhouse, dancehouse, sweathouse'

In its essentials, the Maiduan ǩum is identical to the Wintuan ɬut. The major settlements in the Maiduan territory all had a ǩum. Since it was an excavated place with an earth covered superstructure, its original site is relatively easy for an archeologist to identify. In addition, numerous place names among the Maidu and Konkow (Riddell 1978) and among the Nisenan (Littlejohn 1928; Wilson and Towne 1978) include the word ǩum. The name for this structure is related to various Ob-Ugrian words, and it has extensive cognates reaching back to Proto Uralic times. The semantic development which is so clear within Maiduan ('hole > pit > house') is similar to that which we saw in the case of ɬut.

It should be noted in this context, that most of the Ugrian languages, with the exception of Eastern Ostyak, changed the Proto Finno-Ugrian initial *k- before a velar vowel a o u to a velar fricative *x-. (Lakó 1968:48). In many cases a similar sound law operated in the California Penutian languages; but the word ǩum was not affected by it. It is more than probable that the glottal ǩ- in Maiduan is somehow connected with this historical process.

The comparative sets appear as follows:

PUr *kuma(-) 'hollow produced by bending over and covering'	
Ostyak	
S xom 'hole, hollow part	Md ǩûm 'hole'

	of a spear, axehole'		
Vg	kum 'hollow part of a spear, to make a hole' (Note k-! Loanword?)	Md	kùm-hý 'sweathouse' "hole house"
OsS	xom-əl 'cavity, hollow'		kùm-pýnno 'hole, cavity in the ground'
VgS	xom-əl 'grave'		?óm-kùmí 'cave' "rock house"
	xom 'to cover etc'		kumú 'dancehouse'
Hu	homorú 'hollow, concave'	Ni	kum 'roundhouse, hump, gopher mound'
	hom- 'to cover, bury'		

MSzFUE:296;(KT)302.

It is significant that the southern neighbors of the Nisenan -- namely the Plain Miwok and the Northern Sierra Miwok -- call the "earth oven" kume. We saw a similar semantic development in the case of łut and Maidu łŷt above.

The Yokutsan *moš 'sweathouse'

The word *mos 'sweathouse' occurs in eighteen of the twenty one Yokutsan dialects (or languages). This is one of the most homogeneous forms in Yokutsan. Newman recorded mōs for Yawelmani, spoken south of Bakersfield. Golla (1964:65) reconstructed *moš. The Ob-Ugrian cognate is from Northern Ostyak.
The comparative set is as follows:

OsN	mos 'sweat'	PYo	*moš 'sweathouse'

The Western Miwok *lamma 'sweathouse'

This word seems to be related to the Yokutsan -- Chukchansi and Yawdanchi -- words for sweating, and ultimately to the Finno-Ugrian words indicating the 'heat of the house' etc.

The comparative sets appear as follows:

Hu	*lám-g > láng 'flame, to be heated emotionally, to glow'	PMiw	*lámma 'sweathouse'
		Mim	lámma 'sweathouse'
		Mib	lamma 'sweathouse'
Zr	lom- 'to burn'	YoCh	lo·m̓-uk̓ 'to sweat'
Vt	lum-ît 'warm, lukewarm'		lum̓-k̓un-ùt 'to sweat'
		YoYd	dum-kun 'sweat'

Borrowed into Ob-Ugrian:

OsNi tüm 'heat of the oven and the "chuval"' YoYd dum-uk 'to sweat'

VgN lum 'embers, glowing coal' YoYw tum̓-uk̓ 'warm,lukewarm'

MSzFUE:386.

Nisenan ?ota 'to sweat' and the Ugrian reflexes of Maiduan medial -t-.

In the light of the above sets we are justified in connecting Nisenan ?ota 'to sweat' to Lake Miwok ?éet- to be hot (said of person)' and ?éetaw 'to be hot (said of an object or the weather)'. For the vocalism compare Nisenan ?oto 'to get up; morning'(Maidu ?otó 'to arise, to get up') and Bodega Miwok ?éttu 'to climb' along with Central Sierra Miwok ?etú·-t- 'to come out (of the sun', ?ét·u 'sunlight'. The Nisenan and the Lake Miwok words have Ugrian cognates.

Since these forms, and generally the sound law operating in the reflexes of medial -t-, illustrate so well the position of the California Penutian languages and their relationship to Ob-Ugrian we found it useful to go into the historical relationship of this phoneme in greater detail.

Proto Uralic, Proto Finno-Ugrian medial *-t- remained *-t- in the Ob-Ugrian languages, but it changed into -z- in Hungarian. The list below indicates the reflexes of several words with Finno-Ugrian medial *-t- together with their reflexes in Hungarian, Ob-Ugrian and Maiduan.

The comparative sets appear as follows:

Hungarian	Ob-Ugrian	Maiduan
iz-zad 'to sweat'	OsS at- 'to heat'	Ni ?ota 'to sweat'
iz-zó 'glowing'		weni ?ota-tai 'medicine steaming, sweatbath' (Beals 1933:390)
		Mil ?éet-'to be hot'
MSzFUE:334.		

Hungarian	Ob-Ugrian	Maiduan
izé 'thing, thingamajig'	Vg ut 'thing' OsS at 'thing' OsN ata 'to fix' OsK otti 'to fix, to raise'	Ni ?otta 'to cinch up a baby in basket' Mu otto 'to fix, to mend'
MSzFUE:333.		
íz 'segment, part, member'	OsS jət 'segment, member, compartment'	Md jot-ót 'to separate, divide, compartmentalize'
MSzFUE:332		
híz- 'to get fat'	Vg xūt-'to get fat'	Ni hyt̀ 'fat' Md hŷt̀ 'fat'
híz-ó 'fat pig' =	= *xūt-pe 'fat'	hýt-pe 'fat,(adj.)
MSzFUE:287.		
húz 'to pull,drag'	Vg xot 'to tear'	Ni hoto 'to drag' hut-tuj 'to change, to move to another place'
Cf. German ziehen 'to pull' and umziehen 'to change habitat'.		
MSzFUE:312.		
fűz-fa 'willow' fa 'tree'	Vg -pə 'tree'	Ni pot'o''willow' Md pá 'bush, tree' pā 'willow' Ni pata-ta 'willow'
MSzFUE:226, 227;171.		
fáz- 'to be cold'	Os put 'to freeze, to get cold'	Ni p̀yt 'cold' Ko put-te 'cold'
MSzFUE:185.		
faz-ék 'pot'	OsN put 'pot, kettle'	Md patá 'basket' (of birchbark or loose-woven)
MSzFUE:184.		

In Northern Eurasia pots originally were made of birch-bark and cooking was done by 'stone boiling', up to the last century. The same method is used by the California Indians. The Maidu cognate preserves the original meaning..

The Maiduan "Sweat Dance" in relation to the Ugrian shamanistic trance and ecstasy

Dixon (1905:321) writes that among the Maidu, "During the winter season, the Sweat dance (kúmlaidu) is held from time to time. No woman may be in the dancehouse, although they may look down through the smoke-hole. The men wear only a small grass apron, and, gathering at night, dance in two sections, one on one side of the fire, and the other on the other. One man is the singer, and stands by the main post, which he strikes with a clapper rattle. The two parties of dancers, each try to outdo the other in their endurance, and the dancing consists mainly jumping up and down without moving from the spot. When all is over, all rush out and jump into the river." (Emphasis OJS) Beals (1933:403) reports a similar competitive sweat dance among the Nisenan.

There are several elements in the Dixon description which point toward a ritual act; not to an ordinary social dance. The most important element is, that the singer strikes the main post with his rattle. We know that the most sacred item among the Maiduan ritual objects, was one of the posts of the kum. If there were two posts in one line, the ritually significant post was the one behind the fire, opposite to the entrance. Dixon (1905:169) states, that the "...nem südoko or kúkinim südoko ("great post" or "spirit post"); ...that behind the fireplace, was the more important of the two and was regarded as really sacred. Near it the chief dancer stood, on it the shaman and spirits pounded with their rattles and down it into the house the spirits themselves occasionally came." (Emphasis OJS)

The center pole in the Ostyak house was also sacred. We are told by Munkácsi (1906:93)that according to Belavskij, in every Ostyak dwelling there is a very sacred pole, opposite to the entrance, with the fire in the center. The top of this pole reaches above the roof and symbolizes the master of the house. It is often decorated with a highly stylized human face, like the post around the sacred areas in the forest. It is assumed that the idols of the Ostyaks evolved from this pole. This pole is located, like the California sacred pole, in the sacred "clean" part of the house. As in the California roundhouse, women were generally not allowed to enter this portion of the house. Among the Ostyaks the entire family displayed great care for this pole. A female over eight years of age did not dare to

pass between this pole and the fire. Lehtisalo (1956:446) writes, that the Yurak Samoyeds also consider the vertical poles of the tent (śimsi) to be sacred, and that they are considered to be the exclusive property of the shaman.

As we saw above, the Ostyak sacred pole represents the master of the house. Similarly, among the Wintuan Nomlaki (as told by Jones to Goldschmidt), the center pole represents a human being -- most likely the chief-- earthly and supernatural. This gives an additional significance to the terms: Wintuan sektu 'chief' and Lake Miwok hójpu 'chief' in reference to the center pole. The ritual performed during the setting of the center pole of the dance house cannot be more explicit: "The important men have meanwhile gone to the location of the center pole and have dressed it as a dancing man with a feather headdress. It is then carried to the house pit by six or eight men on a "stretcher" made of grapevine, accompanied by two singers, who sing a "march." They do not set the pole down til they get to the hole, where they set it upright in a special way and tamp it into place." (Emphasis OJS)(Goldschmidt 1951:423)

The linguistic aspects of the Maiduan "Sweat Dance" points to very important elements in Ugrian shamanism. As we saw, the dance is called kúm-laj-du. The word kum means 'ceremonial house' or 'sweathouse' and we treated it above. The word láj means 'warm, hot' in Maidu. It is clearly related to Vogul rēj 'heat, trance, ecstasy' (tōrəm rēj = 'god's heat'), and Hungarian rej-, rév- 'shamanistic trance'. There is probably no other word which received greater attention by the students of ancient Ugrian religion. Pais(1975) reviewed the vast amount of material while treating this important word. It is clear that its full treatment eventually will require an extensive study. Let us introduce here some of its cross-continental implications.

The Maidu word laj is the regular correspondence of the Vogul and Hungarian forms. Maidu does not have an r phoneme. Words with initial r- borrowed with an l- by the Maiduans. For example, English room becomes lúmi; Spanish reales becomes líjan. The Nisenan borrowed railroad as le'lot, and Spanish reata, riata 'rope' as lija'ta.

It should be pointed out that the -j in Hungarian rej- is secondary, reflecting *rey. It is significant, however, that Maiduan always reflects the Vogul alternate form -j, as in rēj.

The same sound law is operating between Vogul, Wintu and Patwin as it appears in the examples quoted below.

The comparative sets appear as follows:

Vogul	Maiduan
rēɣ ~ rēj 'warm, hot'	Md láj 'warm, hot'
meɣ-~ mej- 'to give'	Md méj 'to give'
peɣ-~ põj- 'to bathe'	Md pije 'to bathe'
jeɣ ~ jej 'elder brother'	Ni ʔeji 'elder brother'
leɣ-~ lej- ~lij- 'to throw'	Ko loj- 'to throw'
	Wintu łeɣ-~łiɣ- 'to throw'
	Patwin łeɣ- 'to throw'

The Ugrian cognates of Maidu láj 'warm, hot' are extensive.

The outline of the cognate sets appears as follows:

Ugrian	Maidu
Vg rēɣ ~ rēj 'warm, hot, shamanistic trance'	láj 'warm (of weather)'
	pi-láj 'hot (of weather)'
Os ruu 'heat of the house, trance' (intoxicated)	láj-mèn 'summer'
Hu rej-t *reɣ-t 'secret, to hide, magic, to perform magic, to faint'	kúm-laj 'to hibernate'
rév- 'trance'	kùm-láj 'to dance around the fire in the dancehouse'
rek- 'summer heat'	Konkow
reg-e 'tale, saga'	laji 'warm, hot'
reg-ős 'singer of good wishes' (Originally 'magician')	
rég 'long time ago'	
reg-gel 'morning'	laj-da 'morning'
	laj-dam-lyly 'morning-star'
MSzFUE:526-528.	

Vogul rēj and Maidu láj primarily refer to the heat of the house. Pais (1975) collected the testimony of early travelers and ethnographers who stressed the fact that the excessive heat in the closed house (produced

on purpose) was to facilitate the ecstasy of the shaman. He concluded (and this is eminently corroborated by the California evidence), that the ecstasy of the shaman among the Ob-Ugrians was produced by several means. The use of amanita muscaria (the fly agaric mushroom) was the principal method. Another, perhaps even more ancient method, was the exposure of the shaman to excessive heat. The Nisenan Sweat Dance (Beals 1933:387) is competitive sweating. Two competing parties fan the fire in turn and each tries to outdo the other. Shamanistic contests were also done in similar ways. According to the testimony of the informants, fainting (cf. Hungarian rej-t- 'to faint') was common during such competitions. The symptoms, e. g., excessive nose bleeding, are similar to those produced by other means. In this context, we should mention that herbs producing thick, perhaps narcotic steam and smoke (to which the early reports allude), cannot be excluded. The discussion of this specific feature (i. e. steam) in Ob-Ugrian and California Indian cultures is connected mostly with purification rituals, such as those performed after childbirth, before a hunt, after being contaminated by unclean objects or persons, and after funerals. It is possible that the Sierra Miwok word for sweating and sweathouse (čap-) is connected with the Vogul word sap-jiw, the incense used during the purification ritual by the Vogul woman.

One more aspect of the Maidu Sweat Dance ḱùm-láj requires a comment. It is explicitly stated by Dixon, that the dance is held in the winter. We should point out the word for winter: ḱúm-mèni 'sweathouse, dance-house season'. Also ḱúm-láj means 'to hibernate' i. e. to keep warm in the dancehouse. The dance seems to be held in the anticipation of láj-mèn 'summer, warm season'. The Nisenan spring festival of heating up the sweathouse seems to symbolize the warming up of the nature.

It has been pointed out by several students of ancient Hungarian mythology, that the Hungarian custom of the regősök "singing magicians" going from house to house with good wishes on the second day of Christmas (or generally around the middle of the winter) is connected with an ancient pagan ritual associated with winter solstice and yearning for the warmth of the spring. Their well known refrain: Hej, regő rejtem... contains the two roots: their magic name (reg-), their magic activity (rej-) and the cognates of Maiduan láj.

The Division of the Uralic Languages

- Proto Uralic PUr
  - Proto Finno-Ugrian PFU
    - Proto Finnic PF
      - Western Finnic WFi
        - Finnish Fi
        - Karelian Ka
        - Olonets Ol
        - Veps Vp
        - Vote Vt
        - Livonian Lv
        - Estonian Es
      - Lappish Lp
        - Pite LpP
        - Lule LpL
        - Kola LpK
      - Eastern Finnic EFi
        - Zyryan Zr
        - Votyak Vty
      - Volga Finnic VFi
        - Cheremis Ch
        - Mordvin Md
          - Erza MdE
          - Moksa MdM
    - Proto Ugrian PU
      - Hungarian Hu
      - Ob-Ugrian ObU
        - Vogul Vg*
        - Ostyak Os**
        - Cal-Ugrian (California Penutian)
          - Wintuan Wi
            - Wintu W
            - Nomlaki No
            - Patwin Pa
              - Hill Pah
              - River Par
          - Costanoan Co***
            - Mutsun Mu
            - Rumsen Ru
            - Chocheño Cho
            - Santa Cruz SCr
            - Soledad So
          - Yokutsan Yo****
            - Yawelmani Yw
            - Yawdanchi Yd
            - Chukchansi Chu
          - Miwokan Mi
            - W. Miwok Miw
              - Bodega Mib
              - Marin Mim
              - Lake Mil
            - E. Miwok Mie
              - Bay Miba
              - Plains Mip
              - North. Sierra Mins
              - Centr. Sierra Mics
              - South. Sierra Miss
          - Maiduan Ma
            - Maidu Md
            - Nisenan Ni
            - Konkow Ko
  - Proto Samoyed PSa
    - Northern Samoyed SaN
      - Yurak (Nenets) Yr
      - Forest Yurak YrF
      - Tavgi (Nganasan) Tv
      - Yenisei (Enets) Yn
    - Southern Samoyed SaS
      - Selkup Sk
      - Kamassian Km
      - Koibal Kb
      - Motor Mt
      - Taigi Tg
      - Karagas Ka
      - Soyot So
  - Yukagir Yuk

Voegelin and Voegelin include in the Penutian Phylum also such languages as Klamath-Modoc; Sahaptin-Nez Perce; Cayuse; Molale; Coos; Alsea; Siuslaw, Umpqua; Takelma; Kalapuya; Chinook; Tsimshian; Zuni; Mixe, Zoque, Popoluca; The Mayan Family (31 languages); Chipaya-Uru (in Bolivia); Totonac; Huave.

*VOGUL DIALECTS: Konda K; Lower Konda LK; Lower Losva LL; Middle Konda MK; Middle Losva ML; N Northern (mainly Berezovo); Ob Ob; Pelym(ka) P; Sosva So; Sygva Sy; Tavda T; Upper Konda UK; Upper Losva UL;Vagilsk V; Yukonda Yk; Yukonda at Levdym YkL. **OSTYAK DIALECTS: Northern Ostyak OsN: Berezovo B; Kazym Ka; Muzhi M; Obdorsk O; Sherkaly Sh; Shuryshkar Shu; Synya Sy; Sygva Syg. Southern Ostyak OsS:Demyanka D; Irtysh I; Konda K; Nizyam Ni. Eastern Ostyak OsE: Likrisovskoye Li; Salym Sa; Tremyugan Try; Vah Vh; Vasyugan Vy;Surgut Su; Verhne-Kalimsk VK; Yugan Yg. ***COSTANOAN LANGUAGES:(additional) San Francisco SFr; San Jose SJ; Santa Clara SCl; San Lorenzo SL. ****YOKUTSAN DIALECTS:(additional) Tulamni Tu; Hometwoli Ho; Palewyami Pa; Wükchamni Wü; Chukaimina Chm; Michahay Mi; Ayticha Ay; Choynimni Cho; Gashowu Ga; Kechayi Ke; Dumna Du; Chawchila Chw; Wechihit We; Nutunutu Nu; Tachi Ta; Chunut Chn; Wolasi Wo; Choynok Chk.

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